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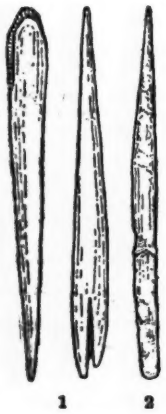
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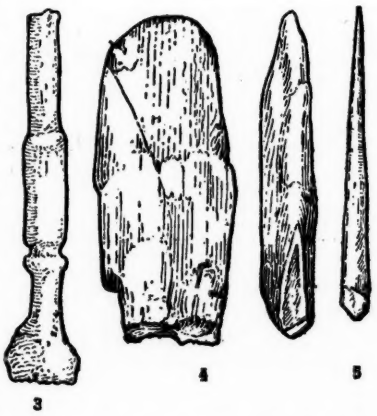
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A Lecture
ON
THE DIAGNOSIS OF GLAUCOMA.

GIVEN AT THE NORTH-EAST LONDON POST-GRADUATE COLLEGE, TOTTENHAM, JANUARY 20TH, 1920.

BY

LIEUT.-COLONEL R. H. ELLIOT, I.M.S.(RET.).

THE teaching of post-graduates differs from that of students in one very important particular—namely, that of the angle from which we approach the subject. The teaching of the student is synthetic. An idea is presented to his mind under the cover of the name of a disease—for example, glaucoma. Round that idea we build up a number of items of knowledge having reference to the symptoms, the diagnosis, the pathology, the prognosis, the treatment, etc., of the disease we are studying. Such a line of study is made easy for the student by the fact that when he enters the wards he finds the cases allotted to him already marked with the diagnoses which have been made by his teachers.

The post-graduate practitioner is in a very different position. His patient comes to him with a complaint of one or more signs or symptoms, any or all of which may be, and indeed usually are, common to many diseases. Starting from one or more of the clues thus offered, the medical man has to work his laborious way in a search for the cause of the trouble. Very often he has to do so through a tangle which time and study alone will enable him to unravel.

One of the tragedies of ophthalmic practice lies in the frequency with which we meet men and women blinded by glaucoma, simply owing to the failure of the medical men in charge to make an early diagnosis of the condition and to take unflinching action thereon. It is not that there is any real difficulty in recognizing what is wrong, but rather that the possibility of the existence of the disease is too often forgotten, with the result that the symptoms are ascribed to some more commonly met with condition. It is therefore from this angle that we shall approach our subject to-day. First, we shall take the outstanding signs of glaucoma which first impress themselves on the attention of the patient and of his doctor; then we shall show what steps the practitioner can and should take in order either to make a firm diagnosis of glaucoma, or to exclude the presence of that disease. On another occasion we shall study the means at the disposal of the expert for the assistance of the practitioner who consults him.

HEADACHE.

This may be of various kinds.

(A) *A Passing Morning Headache.*

The patient complains that he awakes in the morning with a dull headache, which passes away after he has been up and about for a while; sometimes he will volunteer the information that it is gone by the time he has finished shaving, or that he has forgotten it after reading the paper on his way down to office. On questioning him he will admit that the sight of that eye is dim whilst the headache is on. Rarely he will have noticed dilatation of the pupil and still more rarely haloes round lights. I am far from wishing to suggest that all morning headaches, or even the majority of those headaches which undoubtedly emanate from eye trouble, are due to glaucoma; for, strange as it may seem, headaches due to an error in refraction are sometimes most complained of in the morning, though, as a rule, they are worse at night and relieved by sleep. We have also to take account of the large numbers of other causes of morning headache which are in no way connected with the eyes.

The points of diagnosis have already been indicated. The patient should be warned to look out for the association of headache, misty vision, dilatation of the pupil, slight circumcorneal congestion and haloes round lights; and an ophthalmoscopic examination should be made to ascertain whether there is cupping of the disc, or abnormal pulsation of the retinal vessels.

The explanation of this early morning glaucoma is of interest. Throughout life the clear fluid which fills the chambers of the eye (both the aqueous and vitreous chambers) is being continually derived from the blood circulating through the ciliary body. With equal regularity it is steadily oozing away at the angle of the chamber through the pectinate ligament into the canal of Schlemm, and thence into the vessels which lead the blood out from the eye. If the rates of inflow and outflow correspond, the amount of fluid retained within the eye remains constant, and the intraocular pressure continues at the same level; but if there is any obstruction to the outflow of the fluid, whilst the rate of inflow remains the same, the tunic of the eye will become overstretched by this increase in the mass of the fluid it contains, and the intraocular pressure will rise correspondingly. If I may be permitted to use a simile: We take a rubber globe like a football, and to it we attach two pipes; one of these leads fluid into it from a tap, which is kept constantly running at an even rate, the other allows fluid to escape at exactly the same rate. The pressure of the fluid within the ball remains the same, and the tension of the coat of that ball does not alter. If now, we slightly pinch the exit tube, more fluid accumulates within the globe than before; the walls are distended in consequence; the pressure of the fluid within the ball rises; and the coat, as felt from outside, becomes harder. If we increase the rate of outflow, the previous condition of affairs is restored.

Professor Arthur Thomson has shown strong reason to believe that during our waking hours there is constantly at work a mechanism whereby the intraocular fluid is pumped out of the eye. The motive force of this pump is supplied by the movements of the iris, and by the contraction of the ciliary muscle. Every time that the pupil contracts and expands under varying conditions of light, and every time that we bring our ciliary muscle into play, as we adjust the eye for sight at varying distances, fluid is being sucked from within the globe into the canal of Schlemm and is again being driven out of the canal of Schlemm into the efferent vessels. During the hours of sleep this pump action ceases, but a normal eye is capable of providing sufficient outflow even without the aid of this mechanism. It is when the excretory channels are, for one reason or another, becoming less efficient, that danger arises. The cessation of the pump action during the hours of sleep may then determine the onset of a condition in which excretion is insufficient for the needs of the eye. A slight addition to the fluid accumulated within the globe will then give rise to moderate attacks of increased tension during the hours of sleep. The consequence is that the patient awakes with a slight attack of glaucoma, as evinced by the headache, the dimness of vision, etc. When he gets up, and begins to use his eyes, the pump action is restored, excretion is hastened, and the symptoms pass away for the time, only to return with increasing frequency and severity as time goes on. Here we have (1) a ready explanation of these morning headaches, and (2) an obvious direction as to the timing of our meiotic drops when we use them.

Diagnosis.

It is only when the headaches are accompanied by the other signs and symptoms of glaucoma that we are justified in making a diagnosis of that disease. In any and every case of the kind one of the first things to do is to have the patient's refraction carefully estimated and any errors corrected. It must never be forgotten that an error in refraction may be a cause of congestion of the eye, and so may be a predisposing factor in the onset of glaucoma.

You will ask me why it is that medical men consider it an axiom that sleep is good for glaucomatous patients, and how I reconcile this with the statements I have just made. The answer is simple. Glaucomatous attacks usually depend on the onset of a state of congestion of the eye; sleep quiets the whole nervous system, inclusive of its vasomotor mechanism, and so gives the eye a chance of recovering its normal condition of vascular equilibrium. On the other hand, if the channels of excretion are gradually becoming too constricted for their work, and if, in consequence, instead of being free enough to allow of the ready escape of the necessary amount of intraocular fluid they are so far constricted that they need the assistance of the pump action above outlined, the patient has reached a condition in which sleep brings a constant and steadily increasing danger. I say steadily increasing because (1) it increases more and more as the constriction

of the channels becomes aggravated with the advance of life, and (2) in any one night it increases in proportion to the length of sleep the patient indulges in. The order of events is here as follows: Cessation of the pump action; overfilling of the eye with fluid; consequent obstacle to the outflow of blood through the overstretched coat of the globe; and thus increase of intraocular pressure produced in a double manner and with the establishment of a vicious circle.

(B) *Headaches after Near Work.*

As a man advances in life small errors in refraction, which have not troubled him hitherto, give rise to symptoms, prominent among which are headache, pains in the eyes, a feeling of ocular fatigue, and increased lacrymation. The onset of presbyopia, too, takes its toll of his energy. If his refraction is carefully corrected, and suitable glasses are prescribed, and if any error in muscle balance is likewise attended to, the symptoms should pass away completely, leaving the patient once again forgetful that he even possesses eyes. If, however, the symptoms do not completely subside, and especially if the presbyopia increases more rapidly than we should normally expect it to do, we must look further afield for the cause of the trouble, and one of the many possibilities we should bear in mind should always be the occurrence of high tension in the eye. Such a suspicion should lead us to examine the fundi with great care. The presence of a glaucomatous cup would at once put us on our guard, but, even apart from this, an increase in the pulsation of the retinal vessels, especially if arterial in character, would have a marked significance for the careful observer. Increased pulsation—especially when arterial—is probably invariably the earliest sign of glaucoma, though it cannot always be elicited, owing to the fact that the increase in tension is often intermittent in character. The moral of all this is: Be suspicious of headaches in elderly patients when these persist in spite of careful correction in errors of refraction and muscle-balance.

(C) *Severe Headaches often attended by Vomiting.*

These are often taken to be due to some form of gastro-intestinal disturbance, and are then spoken of as "bilious headaches." At other times they are caused by a tumour of the brain, or by some other form of cerebral disturbance. There are many other possibilities, into which we have no time to enter. The one lesson I desire to drive home to-day is that whenever you see an elderly patient suffering from severe headache, whether accompanied by vomiting or otherwise, you should at once rank glaucoma as one of the possibilities to be considered and to be excluded if possible. Other causes of severe headache come and go, leaving the patient little the worse, except for the memory of his experience. It is far otherwise with glaucoma. The headache and the sickness are mere passing events in comparison with the appalling possibilities that loom before your patient if you leave one of these severe bouts of increased tension untreated.

You must obtain a good view of your patient's eyes and, if necessary, you must instil a 4 per cent. solution of cocaine to enable him to face the light for the purpose.

If the eye is congested, and especially if the circum-corneal zone stands out pink, as contrasted with the rest of the eye, two ideas should flash into your mind, namely, acute iritis and glaucoma. Is the pupil widely and evenly dilated? If so, the probability is that you are dealing with a case of glaucoma. But remember the possibility that a mydriatic may have been used very early for iritis. Search the anterior capsule for evidences of adherent iris pigment; and look also for any characteristic irregularity in the outline of the pupil.

Take the tension of the eye with your hand, especially in comparison with its fellow. The acute glaucomatous eye is stony hard. There are many cases of glaucoma in which the rise in tension is so small that two or more medical men may well argue whether it is present or not. No such doubt exists in these cases. The student can recognize the hard eyeball without fail.

Then look at the cornea! In the glaucomatous eye it is steamy; most unmistakably so, indeed. Its polished lustre is gone; the beautiful mirror of the eye looks as if it had been breathed upon; the details of the iris pattern are lost. At the same time we observe that the anterior chamber is abnormally shallow.

In less severe cases, where the media are still transparent, an ophthalmoscopic examination will probably show cupping of the disc. It will not necessarily do so, for, though rarely, glaucoma may make its first appearance as an acute attack, and then the disc has not had time to be depressed, but arterial pulsation will be well seen if the media are clear enough to permit examination.

It is not that there is the least difficulty in making a diagnosis. Certainly not. The trouble is that the busy practitioner may for a moment allow himself to forget that whenever he meets with severe headache of this type, glaucoma is one of the possibilities that should at once flash through his mind. Forewarned will be forearmed.

Just a word or two more on the differential diagnosis between glaucoma and acute iritis. In the latter the pupil, unless it has been artificially dilated, tends to be severely contracted; at an early stage it fills up with plastic exudate. If a mydriatic has been used evidences of irregularity of outline of the pupil, or at least of pigmentary deposit on the anterior capsule, will rarely be lacking. The cornea will be clear, while the pattern of the iris will be muddy; engorged vessels will be seen to stand out on the surface of the iris; the anterior chamber will be of normal depth and not shallow, as it is in acute glaucoma.

There remain the cases in which glaucoma is secondary to iridocyclitis. The wise practitioner will hasten to share the responsibility of such with his specialist colleague at the earliest possible moment.

Loss of Sight.

This, like the headaches, may vary greatly in different patients. We shall consider the typical varieties in turn.

(A) *Gradual Loss of Sight without any Apparent Cause.*

Let me pause here to explain that when a patient comes to you complaining that his "sight is not so good as it used to be," you should not be content merely to set a Snellen type up before him and to ask him to read it down to the 6 m. line. Many a surgeon, under these conditions, will endeavour to reassure his patient, and will then send him away. Those who do so are taking grave risks, for the patient may be right and the surgeon may be wrong, despite the test that has been applied. Let me elaborate the subject. Sight does not merely consist of central visual acuity as measured by a standard card. On the contrary, there are a number of elements to be considered:

(i) *The rapid increase in presbyopia* met with in glaucoma we have already referred to; this is doubtless due to the numbing pressure exerted on the third nerve endings in the ciliary muscle, which gradually robs that structure of its contractile power.

(ii) *The visual field may gradually shrink in area*, thus robbing the patient of one of the safeguards of his daily life, whenever he is on the move amongst other people or even amongst inanimate objects. He does not realize what his trouble is, so naturally he cannot explain it to you, but he is conscious that he is more apt to run into people or things than he used to be. Using even a rough test you may learn that one or both of his fields is contracted. No apparatus is needed. You bid him stand opposite to you, and fix your right eye with his left or vice versa; at the same time you both shut the other eye, then, moving each hand in turn midway between him and you, you roughly map out his field, making your own the standard of comparison; any great contraction of the visual area will be thus easily revealed.

(iii) *The light sense may be greatly reduced.* This is a characteristic of glaucoma, though but little attention is usually paid to it. From the patient's point of view it is a matter of great importance. Print or writing no longer stands out vividly like it used to do, even in a good light, and he finds great difficulty in reading when the illumination is of poor quality. When he passes from bright light into darkness, or comparative darkness, he has great difficulty in seeing until his eyes have become dark adapted. On the other hand, when he passes from a poor light into a bright one, he is dazzled, and must wait until he can get accustomed to the glare.

(iv) *Reading test.* In spite of the fact that the patient can make out all the letters on the 6 m. line of a test

card, he may be conscious, perhaps only dimly so, that he does it more slowly, and with more difficulty, than he used to do formerly; or perhaps he may in past time have had vision well above the normal, and be dimly conscious of the change in his visual power, though he would find it difficult to express the change to a sceptical surgeon.

To sum the matter up: When a patient, who you have reason to believe is honest, thinks that his sight is failing, it is unwise to dismiss him as a *malade imaginaire*. Remember that simple glaucoma may be far advanced, with nothing to indicate its presence but what I have ventured to call "the triad of glaucoma signs"—(*a*) contraction of the visual field; (*b*) cupping of the disc, and (*c*) failure of central visual acuity. Even then the last named defect may be but poorly marked.

Differential Diagnosis.

We shall now shift our ground and assume that the gradual loss of sight has not only been complained of by the patient, but has also been recognized as a clinical fact by the doctor. What dangers still attend us? In other words, with what other conditions are we likely to confuse a chronic glaucoma? I speak from frequently repeated practical experience, when I answer: (1) Cataract, (2) refraction errors, (3) brain trouble, and (4) optic atrophy. We shall consider these in turn.

1. *Cataract.*

Not a great while ago I saw a patient who had been sent to see a specialist by her doctor. She was told she had cataract, and must wait until she was worse before she could be made better. Six months later the patient made the striking and alarming observation that her "sight was at some times much worse than at others"; her doctor found she had cupped discs; the specialist confirmed it, and I had no difficulty in agreeing. Such a mistake should not occur. A cataract can always be seen, and that quite easily, by a method which I do not think you will find in the textbooks. Put a + 10 lens behind the eyehole of your ophthalmoscope, and examine the eye (preferably with the pupil dilated) at a distance of five or six inches, moving backwards and forwards until sharp focus is obtained; every detail of the lens opacity will stand out clear to your view against the bright fundus reflex. Your diagnosis is a positive one, and is very easily made. As time goes on you will be able to follow the increase in the strokes or dots that make up the opacity. On the other hand, the cupping of the disc and, what is often more marked still, its pallor will put you on your guard against glaucoma.

2. *Refraction Errors.*

When a man finds that his sight is steadily failing, and that the careful correction of any errors present does not help him to see again, you may assume that something is wrong either with his media, or with his retina and optic nerve. Once again the diagnosis is not difficult in most cases; what is important is that the possibility of the presence of glaucoma should be borne in mind, and that the examination of the patient should be careful and on routine lines. There is a great deal of rubbish being sold the public to-day—probably more than ever in history—and medical advice must sometimes be included in the category. It is not that men—specialists as well as practitioners—cannot do good work if they choose; what is wrong is that the hurry and bustle of an aeroplane age lead many to give too little time to their cases, with the result that they do bad work. To put it on the lowest of all grounds: It does not pay. Make up your mind that you will not do it! I knew a chemist who advertised, "I cork my reputation in every bottle of medicine I send out." Try that in your practice.

3 and 4. *Brain Tumours and Optic Neuritis.*

What has just been said applies here again. Any man can use an electric ophthalmoscope; it requires no learning; any intelligent man can see an optic neuritis and distinguish it from a glaucoma.

5. *Optic Atrophy.*

Now, here we come to the one real difficulty—namely, the differential diagnosis between the various forms of optic atrophy, inclusive of that due to chronic glaucoma. If the discs are pale and the cupping is not pronounced, do not hesitate to call in expert aid. You will be wise in your own interests and kind to your patients if you do so as early as possible.

A word may be said about "tobacco amblyopia," because it is so very susceptible to satisfactory treatment. A rough test will suffice in most cases. Take a clean sheet of white paper; on it make a number of dots with black ink, and then a number of similar dots with red ink; give your patient a pencil, and bid him rapidly tick off the red dots; if he can do so without hesitation, it is most unlikely that he has tobacco trouble. If he cannot do so, and if he is an excessive smoker and has been gradually losing his sight without a recognizable cause, except possibly pallor of the outer quadrant of his disc, you may win much kudos by treating him firmly and promptly for tobacco poisoning.

(B) *Gradual Loss of Sight, with Intermittent Headaches.*

In all such cases be on the look-out for glaucoma as a possible causative factor. Do not be content to treat your patient for biliousness, or for a nerve breakdown—that blessed modern refuge of the diagnostically destitute—until you have at least thought of glaucoma and cerebral tumour. With regard to the former, as it is our subject for to-day, make a point of seeing your patient in an attack, and look for the dilated pupil, the rise in tension, the shallow chamber, and the evidences of ocular congestion that attend rises in intraocular pressure. In the intervals examine his discs and his visual fields. If you are still in doubt, get an expert opinion.

(C) *Marked Losses of Sight, clearly following Severe Attacks of Headache.*

We have already discussed this subject under the heading of "headaches," and need only now mention the possibility of the eye condition being altogether missed. If the surgeon bears the possibility of its occurrence in mind, he will not go wrong.

Entoptic Phenomena.

Photopsiae, or subjective sensations of light, are a common and early symptom of congestive glaucoma. They may take many forms, one or more of which may be described by the same patient. Thus we may hear of flashes of light, compared to summer lightning, or in the tropics to dancing fireflies; of a ball of fire that rolls across the field of vision from side to side, of sudden flash-like spots of light, or of a continuous luminous glow, which may last for seconds, minutes, or even longer. The patient may volunteer the information that he sees these phenomena most when he is tired, and that they are especially common when he is getting into bed, or has just turned out the light, or soon after he has lain down to sleep. It is to be remembered that photopsiae are seen under many conditions other than glaucoma; in fact, they are likely to appear whenever the retina is irritated, dragged upon, or in any way interfered with. Nor must we forget that similar phenomena, but of central origin, are met with in neurasthenic patients under many conditions. The moral is that such phenomena always indicate the necessity for a careful ophthalmoscopic examination, as well as for a thorough investigation of the patient's refraction, and of the state of his general health.

Rainbows Round Lights.

These are seen when anything occurs to interfere with the natural transparency of the cornea. They are best observed when the patient looks from a little distance at a bright light in the dark. At least two colours are discernible—an inner blue or violet and an outer red; a yellowish band is generally seen between them. The diameter of the halo is from 7 to 8 degrees. Sometimes the patient has to be warned to look for them before he can observe them; in other cases they are so brilliant that every tiny flickering flame in the firelight is iridescent with colours. Some patients speak of them with amused interest, whilst others are inspired by them with deep alarm. Any one of you can observe the phenomenon for yourselves by breathing on your glasses and holding them up to a bright flame or electric light. Anything which interferes with the transparency of the cornea may be productive of haloes, and these may therefore be seen in other conditions beside glaucoma. They are invariably

to be found after treating the iris with silver nitrate. They are also, though not commonly, seen in the early stages of cataract. It must not be forgotten that there are apparently healthy eyes which habitually see haloes round lights in the dark; this phenomenon is probably connected with a faulty state of the patient's refraction. Transient haloes round lights are often complained of by those who suffer from conjunctivitis associated with mucous discharge. Wiping or washing away the offending flake of mucus from in front of the cornea will abolish the symptom.

CONCLUSION.

It is not pretended that this lecture is exhaustive; it merely touches the fringe of a large subject, but it is an effort to help you, by drawing your attention to matters which may too easily be relegated to the background of your mind, with harmful results to your patient's sight and with damage to your own reputation.

NEUROLOGICAL JOTTINGS.*

BY

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I WISH in these notes to direct attention to some points of interest that have come under my notice in the course of neurological work.

Complications of Epilepsy.

When I was seeing, through a long course of years, many epileptics every week at Queen Square, I was not infrequently surprised by curious developments. I remember, for example, one man, treated for many years before I saw him as a chronic epileptic. He had been attending the hospital for seventeen years, and there was nothing in his history to suggest that his case was anything more than one of chronic epilepsy. But one day he appeared at the out-patient room complaining of severe headache, and ophthalmoscopic examination revealed the presence of marked optic neuritis. He was admitted to the hospital, and died in a few weeks of a large tumour of the right hemisphere. Another case which surprised and interested me was that of a healthy looking young man, a railway signalman, who came as an out-patient one afternoon with the history that he had had an attack characterized by loss of consciousness, convulsions, and tongue biting. There was no family history of any such illness, and his personal history was uneventful. He had never had syphilis, and he had no optic neuritis. There was no doubt that the attack was of the nature of epilepsy, and naturally he could not remain at his work as a signalman. He became a barrier ticket collector, and for over four years attended the hospital regularly, and was treated with bromide. At first the attacks occurred about once a month, but they gradually disappeared under treatment. He continued to attend, and one day complained of severe headache which he said he had had for two or three weeks. He had not been subject to headaches before. I examined his eyes then (they had been carefully examined from time to time before, but nothing abnormal discovered) and I found a flaring optic neuritis in each eye. He was admitted, and a decompression operation done to relieve his headaches. He had a large growth in the left hemisphere, from which he died in a few weeks.

I could record a good many similar cases, and I feel sure my colleagues at Queen Square have had similar experiences. I suspect they are cases characteristic of a large group, and the existence of such cases shows how necessary it is not to be content with the diagnosis of "ordinary epilepsy." I remember Dr. Hughlings Jackson remarking on one occasion that there is no such thing as a case of "ordinary epilepsy," and that every case of convulsion or so-called fainting ought to be investigated most fully and carefully, and kept under observation. These cases would seem to "point the moral," but it is obvious that diagnosis of the true cause of the convulsion is in the first instance impossible.

*Part of this paper constituted the Presidential address to the Harveian Society.

Variability in Response to Treatment in Epilepsy.

I have frequently been struck with the variability in response to treatment of some cases of recurrent loss of consciousness with or without convulsion. One case will not be influenced by bromide until he is getting up to something like 30 grains thrice daily. It may then be found that such a patient not only remains free from attacks with such treatment, but improves greatly in general health. I have a patient I see now about twice a year who for the last seven years has taken 35 grains twice a day, and has remained well, and able to carry out responsible duties in a City office. I have another patient, a lady, who for five years has remained well although taking 30 grains thrice daily.

On the other hand, one has seen patients who, with large doses of bromide, become progressively worse, but who improved on different treatment. One little girl was brought to me at the hospital some years ago who suffered from frequent attacks, several a day, of loss of consciousness without convulsion. She was only 6, and I put her on 10 grains of bromide thrice daily. In a month I saw her again. The attacks had become more frequent. I stopped the bromide for a month and saw her again. The attacks were not so frequent as while she was taking the bromide, but as frequent as when I saw her first. I then put her on 5 minims of tincture of belladonna thrice daily and saw her again in a month. There had been no attacks during that time and she remained well. Of course, I cannot explain this. I only state the facts. I understand that a similar result not infrequently follows the administration of *Adonis vernalis*.

Another interesting point I have observed about so-called "nocturnal" epilepsy. I may say, in passing, that this is an unfortunate term and really incorrect. It would seem to indicate that in these cases the fits occur only at night, but this is not the case. It is really sleep which determines the onset of an attack, for in many of these cases of so-called nocturnal epilepsy inquiry will elicit the fact that a fit occasionally occurs during the day, but only if the patient has happened to go to sleep during the day. The point, however, which I wished to emphasize is that while bromide alone is very useful in these cases, its effect seems to be reinforced by the addition of tincture of digitalis, and 30 grains of bromide with 5 minims of tincture of digitalis taken nightly are, as a rule, effective in controlling the attacks.

Dislocation in Epilepsy.

There is one point about epilepsy which is worth remembering. As is well known, after a Jacksonian fit affecting one side and starting in the arm there is frequently temporary weakness of the affected side, usually more marked in the limb in which the convulsions started—that is to say, in the arm in such a case as I refer to. But it must also be remembered that dislocation at the shoulder-joint not infrequently occurs in the course of a convulsion. I remember one case in which one of these conditions was remembered by the observer but the other forgotten. A junior colleague of mine, in my absence on one occasion, saw my out-patients. One of them was a young man subject to occasional fits. He came up on this occasion saying that he had had a fit the previous week and found that after it he could not use his arm. There was a note made to the effect that weakness of the right arm was present, and that although the right leg was not complained of there seemed to be an exaggerated knee-jerk on that side. Obviously my colleague, who had not seen the patient before, thought he was dealing with a Jacksonian fit with weakness of the affected side following the fits. But when the patient came up the following week it was found that he had only a dislocation at the shoulder-joint, and when this was reduced the weakness cleared up.

Recurrent Attacks of Herpes.

I have been considerably interested in herpes, and one or two jottings on this disease are, I think, of interest. I rather think we were all taught that a second attack of herpes is practically unknown. I think I am right in saying that that great observer, Jonathan Hutchinson, was in the habit of telling us that second attacks of herpes did not occur. I have seen three cases which certainly controvert this. One is the case of a man whom I saw at the Moorfields Eye Hospital for some eye condition unrelated

to herpes, who came up one day complaining of an eruption on his neck. I told him it was an attack of "shingles"—cervical herpes—and he told me that he had had an attack on his chest some years before. On stripping him it was obvious from the marked scarring that he had had a severe attack of herpes zoster. The second case was that of a friend of mine—a medical man—whom I saw about twenty years ago with herpes frontalis. About two years ago he had another attack of herpes frontalis on the other side, and he told me that in the intervening years he had had two other attacks of herpes, one in the deltoid region and one of herpes zoster. So that this patient had had in all four separate distinct attacks of herpes, two of which I saw myself.

In a patient whom I saw with Dr. Melvill Green a few years ago—an old lady of 80—a condition was present which I have never seen before—namely, herpes of three different distributions. She had had, about two years before I saw her, not only herpes frontalis but also herpes in the deltoid region and herpes zoster. It was on account of the very severe post-herpetic pain that I was asked to see her, and the scarring in all three regions was extremely severe. The eruption in all three distributions in this case occurred at the same time. She died soon after I saw her, exhausted by the severe and intractable pain. I have also recently seen, with Dr. Robertson-Fullarton, a lady with facial herpes and severe post-herpetic pain who a year ago had an attack of herpes zoster.

This leads me to remark on another point—namely, the curious variability in the occurrence of post-herpetic pain. Such pain in children is, in my experience, practically unknown; in the majority of adults it is severe, but sometimes of comparatively short duration. In a certain number it is not only severe but persistent, and not infrequently leads to a great impairment of health. In old people especially post-herpetic pain is always fraught with a certain amount of anxiety because of the exhaustion to which the pain and consequent loss of sleep give rise. On the other hand one has met some adults, by no means young, who have experienced no pain at all after an attack of herpes.

Herpes and Chicken-pox.

A very interesting point about shingles is its relationship to chicken-pox. Of this relationship the evidence seems convincing, but its explanation is still very difficult. In the *British Journal of Dermatology and Syphilis*, October to December, 1917, there is a most interesting paper by Dr. W. P. Le Feuvre, in which he actually urges that "shingles should be recognized as an infectious disease, and one under certain unknown conditions likely to become a starting point for a chicken-pox epidemic." Reference to the possible connexion of these diseases has been made, especially in the correspondence columns of the BRITISH MEDICAL JOURNAL, and evidence in favour of it adduced. The points common to all the cases brought forward were three in number—

1. Chicken-pox in one individual followed shingles in another within the ordinary incubation period of chicken-pox—namely, twenty-one days.
2. No other source of infection was discovered; and
3. Chicken-pox in a child followed an attack of shingles in an adult.

In Dr. Le Feuvre's paper fifty cases in all are referred to. Before seeing this I myself had been struck by the curious coincident occurrence of these diseases, and I had notes of four instances. One of these—a lady with a very severe attack of herpes of the fifth nerve affecting all its branches—I saw in consultation with Dr. Woollerton. A fortnight later I was asked to see the same lady again, and the doctor asked me also to see her daughter, a young lady of 28, who had such a severe attack of chicken-pox that he had been afraid it might be small-pox. I also saw, in consultation with Dr. Haward, a patient suffering with severe neuralgia after herpes zoster. Being interested in the matter, I asked Dr. Haward if there had been any cases of chicken-pox in the house at or about the same time. He was surprised at the question, but on my explaining the reason for it, he said that three children in the house certainly had had chicken-pox, but he could not remember whether it was about the same time. He promised to look into the matter of dates, and was kind enough to write me to the effect that chicken-pox in two children in the house had appeared about a fortnight after the shingles eruption in the father. Another patient I saw in consultation with Dr. Hewetson on account of pain and actual muscular wasting following a severe attack of herpes in the deltoid region. He also was surprised at my question, but was able to tell me that two children in the house had suffered from chicken-pox within a week or two of the attack of herpes in the adult. Of course I cannot explain this curiosity. The vesicles of herpes are almost, if not quite, indistinguishable from those of chicken-pox except that in the former disease they are so often confluent. Yet one frequently sees in cases of herpes isolated vesicles in parts of the body even remote from the herpetic area—a fact which was brought to my notice some years ago by Dr. Pernet. Dr. Pernet saw with me the medical man to whose case I have already referred, who had four attacks of herpes, and this doctor's only daughter within three weeks of her father's fourth attack of herpes had an attack of chicken-pox. It is stated in the paper I have referred to that shingles may occur in an individual in the house in which chicken-pox is present, and that shingles and chicken-pox may occur coincidently in the same individual. I have not myself seen either of those occurrences, unless the isolated vesicles in remote parts of the body in cases of shingles are really vesicles of chicken-pox.

Lethargic Encephalitis.

Those of us who are working amongst neurological cases are unfortunately only too familiar in these days with cases of lethargic encephalitis. In some of them the condition is fatal, and the changes in the central nervous system now regarded as characteristic are found. In another class of cases recovery takes place, but the patients are gravely altered, and this alteration remains permanent. In most of them the condition established by the disease is practically indistinguishable from paralysis agitans, although when tremor is present it is not of the regular rhythmical type usually met with in paralysis agitans. In many, however, tremor is absent, but the stiff gait, the mask-like immobile face, the low monotonous voice, and often the everted, dribbling lip, make the resemblance to paralysis agitans very striking.

I wish, however, to call attention to what I believe are examples of this illness of a very mild type which apparently make a good recovery. I had recently under my care at Queen Square a young woman admitted on account of diplopia who on examination presented no abnormality except the presence of nystagmus and some general weakness. All the reflexes were normal, and this, of course, excluded the diagnosis first thought of—namely, disseminated sclerosis. And the history was significant; it was to the effect that a few weeks before admission she had become ill—very drowsy, but could be roused to take her food. After partaking of it she at once went to sleep again. This sleepiness had passed off before she came to the hospital. The diplopia gradually ceased to trouble her, but a little nystagmoid jerking still remained when she left the hospital. I cannot but think that this was a mild case of encephalitis lethargica.

Another case I saw in private, a young healthy man of 35 who had been working very hard for a long time. Diplopia in his case was the first trouble, and when I saw him he had obvious weakness of one sixth nerve. He had been sleeping badly. I advised his going to bed. At first his sleep was not good, then it became unusually good, and there was rise of temperature and slight delirium. When I last saw him, however, he was improving in the most satisfactory way. His father was a medical man, and I think I should have heard had there been any relapse. This also I am inclined to think was probably of the same nature, although not so definitely as the other cases I have related.

A SERIES of congresses will be held at Monaco on April 15th and following days. They include congresses of hygiene and climatology, mineral spas, and seaside resorts.

THE Council of l'Assistance Publique has drafted a scheme for the improvement and extension of the hospitals of Paris. Extensive alterations in existing hospitals are proposed in order to bring their various departments up to date, both for the treatment of patients and for clinical instruction; it is intended also to provide several new hospitals, built and equipped in the best manner.

INTRAVENOUS PROTEIN THERAPY.*

BY

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By "intravenous protein therapy" is implied the intravenous injection of a "foreign" protein in the treatment of disease. A "foreign" protein is one not normally present in the tissues of man. Intravenous injection of certain proteins in certain doses gives rise to a chain of symptoms and signs to which the expressive but misleading term "protein shock" has been applied by American workers.

Various proteins have been employed, mainly in the form of bacterial emulsions, though peptone is of value in several conditions. Of bacterial emulsions, the protein complex of the coli-typhoid group of micro-organisms is more efficacious in inducing this "shock" reaction than is that of other species; and when such a reaction is desired, it is a vaccine of typhoid or colon bacilli that is most frequently employed, and the remarks immediately following apply solely to the reaction induced by that type of antigen which may be given either plain or sensitized.

Dosage.

Within fairly wide limits the size of the dose has but little effect on the severity of the reaction. Thus a higher temperature response has been experienced after an initial dose of 50 million killed *B. coli* vaccine in one patient than after 200 million of the same vaccine in another, though it must be admitted the general constitutional disturbance was greater in the latter. The initial dose for an average adult may with perfect safety lie between 50 and 100 million, though Gay,[1] in the treatment of typhoid fever, advocates 150 million sensitized typhoid vaccine as a first dose. Cecil[2] mentions that by an error in technique 400 or 500 million killed typhoid bacilli were given as a first dose to three of his patients with arthritis, yet the reaction was little, if any, more severe than that caused by smaller doses, and the therapeutic effect was no better.

In order to effect the desired result it is necessary to produce a moderate reaction. The dosage in successive injections must be progressively slightly increased so that a like train of symptoms may follow each inoculation.

Technique of the Injection.

The patient is confined to bed for twenty-four hours at least. In order to lessen as far as possible the nausea and liability to vomiting commonly met with, especially after a first injection, a mild aperient is given the evening before. A light breakfast is advisable, and the injection should be made, if possible, before midday, so that the transitory unpleasantness of the reaction may be over before night.

The requirements are: (1) Ether and wool to clean the skin. (2) A sterilized needle and syringe of 10 c.cm. capacity. (3) The vaccine containing, say, 100 million coli or typhoid bacilli per cubic centimetre. (4) Ten c.cm. of sterile warm normal saline solution. This is for diluting the vaccine, as it is more convenient if the volume of the injection measures 10 c.cm. rather than ½ or 1 c.cm., as the larger quantity is easier to handle, and the dose of protein can be given more slowly. (5) Adrenalin solution 1 in 1,000, or $\frac{1}{100}$ grain tabloids of atropin sulphate. (6) An assistant to help in filling the syringe and to constrict the patient's arm, and thus render prominent the veins in the antecubital fossa, is also desirable. Dr. R. G. Canti has designed a very simple tourniquet, easy to release, which is admirably suited for the latter purpose.

Method.—The skin over the selected vein is cleansed, and the desired dose of vaccine, whether ¼, ½, or 1 c.cm., is drawn into the syringe, and the volume made up to 10 c.cm. with normal saline. The assistant now applies the tourniquet, or constricts the upper arm, which is lying flat on the bed fully extended, and the patient is told to open and clench the fist several times until the vein on the front of the elbow becomes prominent; in some individuals the veins are more easily felt than seen. The needle of the syringe is inserted into the vein in the usual manner of vein puncture; a successful puncture is indicated by a flow of blood into the syringe. The assistant now relaxes the tourniquet (or his hold on the arm), and the injection is made very slowly; that the fluid is entering the vein and not the perivascular tissues is shown by complete absence of swelling in the region of the needle point. When the contents of the syringe have been pushed into the vein the needle is withdrawn and the arm held vertically upwards for a few minutes to prevent extravasation of blood; no dressing is required.

The Reaction.

General.—In the afebrile human subject the intravenous injection of from 50 to 100 million killed coli vaccine is followed by a very definite train of symptoms which comprise the so-called "protein shock reaction." For a period varying from three-quarters of an hour to five hours the patient will experience no abnormal sensations, but after that symptoms will appear somewhat suddenly. The earliest symptom is commonly an involuntary twitching of the muscles of the legs. This may spread to the trunk and become general without the patient at first feeling cold, and last, perhaps intermittently, for from fifteen to forty-five minutes; the onset of the rigor is occasionally preceded by a dull ache in the back or shins.

Before the shivering is finished the patient commonly has abdominal discomfort with nausea and, not infrequently, vomiting; he has headache, which is usually frontal and sometimes pronounced. In a reaction of unusual severity the patient may be restless with dyspnoea and cyanosis. Such symptoms are speedily relieved by a hypodermic injection of 0.75 c.cm. of 1 in 1,000 adrenalin or $\frac{1}{100}$ grain atropin sulphate.

As the reaction passes off, especially if it be after a second or third injection, general pains in the limbs, with cutaneous hyperaesthesia, may be complained of for a short time; yawning is frequently seen. As a rule the patient is quite free from headache and other discomfort after the seventh hour, though exceptionally facial herpes may develop two or three days later, with or without tender areas in the skin.

Just prior to the onset of the shivering the *temperature* begins to rise, and continues to do so until about the sixth hour. It commonly reaches 103° or 104° before returning to normal at the end of twenty-four hours; defervescence may be interrupted by a short secondary rise of a degree or so. With succeeding injections of increased dose the fever, though reaching an equal height, is apt to be of shorter duration, and the whole reaction is more quickly completed.

The *pulse frequency* also is increased during the reaction, and extra-systoles may occur during the rigor, and for a short time afterwards. The increase of the pulse frequency is generally of somewhat longer duration than is the raised temperature.

Blood Pressure Changes.[3]—The systolic blood pressure usually shows a fall of a few millimetres before any symptoms are evident. During the rigor I have met with a small rise on two occasions only, and that either to the preinjection figure or a few millimetres above it; more generally the fall continues for twelve hours or so, the reading then being about 20 mm. below the initial figure. The systolic blood pressure is commonly normal again after twenty-four hours. The diastolic pressure generally rises appreciably within the first half-hour. The rise may continue until the end of the rigor, but more frequently this pressure drops rapidly after the first half-hour, and may be at its lowest by the end of the second hour—perhaps a drop of 30 mm. in an hour and a half. It tends to remain at this level for twelve hours or so, but is normal again in twenty-four hours.

Cytological Changes in the Blood.[3]—The intravenous injection of *B. coli* vaccine causes an almost immediate fall in the white blood cells. Following a first injection the retreat of the polymorphonuclears from the peripheral circulation is hurried, and by the end of the first hour they may be outnumbered by the lymphocytes. A rapid increase follows the rigor, and the maximum of 20,000 to 30,000 per cubic millimetre is reached in twenty-four hours; during the leucocytosis neutrophil myelocytes frequently appear, and normoblasts have also been met with. The rise in the number of the circulating leucocytes is succeeded by a steady fall, the preinjection figure being reached in approximately seventy-two hours. Though the fall in the lymphocytes is less abrupt, it is a very striking feature of the blood picture, and of far longer duration than is the polynuclear leucopenia. It is not followed, however, by a lymphocytosis.

The intravenous injection of *peptone* must be made very slowly, or somewhat alarming symptoms may arise rapidly. When giving peptone as a 10 per cent. solution I use a very fine needle, a No. 28 or 30, and, as recommended by Nolf,[5] a nurse keeps constant observation on the pulse frequency, calling out the number of beats in each quarter of a

* An abstract of a paper read before the Hunterian Society on January 28th, 1920.

minute. If this exceeds 35 per quarter the injection is temporarily stopped.

On one occasion when giving the fourth of a series of peptone injections to a patient with streptococcus infective endocarditis, when 10 c.cm. had been given the pulse frequency suddenly increased. In successive quarter minutes the figures were 26, 26, 28, 34—injection stopped—38, 43, 36, 34, 34, 28, 26—injection restarted—28, 26, 26, and, shortly after, 22. The patient, not highly intelligent, said that during this time he felt giddy and "as though his head were going to blow open." He experienced a tickling in the throat, a stomach-ache, and he began to cough, the face became suffused and he sweated a little. The subjective disturbance lasted not more than three minutes.

These symptoms accompany, and are doubtless the outward and visible sign of, a considerable drop in blood pressure and a very rapid fall in the circulating leucocytes induced by the peptone, or primary proteose present with it in solution.

Just as the populace fled from the streets for cover in the tubes on the warning of an air raid, so on the approach of peptone do the leucocytes decamp from the peripheral circulation for the shelter of the pulmonary capillaries, and it is not until an "all clear" is sounded that they emerge from their retreat, accompanied by others, to mark the result of the invasion. With certain doses of peptone these changes take place with extreme rapidity—so much so that it is difficult to obtain accurate records of them—in a moment, in the twinkling of an eye, they are passed. And it is very surprising that in most instances they are unaccompanied by any symptoms whatever appreciable to the patient, who remains in all respects oblivious to the ferment within him. The injection of peptone may likewise be followed by a rigor an hour or so later, but I have never found peptonuria.

It is obvious from the foregoing description of the clinical symptoms and signs that are wont to follow upon the intravenous injection of certain proteins in certain doses that the reaction is in no sense a "shock" in the usually accepted surgical application of the term. Following immediately on a surgical operation, if the patient survive, three phases are commonly seen, termed respectively, "Shock," "Reaction," and "Traumatic Fever." The stage of "Shock" is characterized in the main by subnormal temperature, high pulse frequency, and lowered blood pressure. This is succeeded by "Reaction," in which there is a return of the temperature to normal and a fall in the pulse frequency. Nor does the reaction come under the heading of the so-called "Anaphylactic Shock," which is brought about in the animal body by the reinjection of a foreign protein after the lapse of a certain period of time. Following the initial or sensitizing injection the animal may become "hypersensitive" to the specific protein, so that it reacts in a peculiar fashion to a second or intoxicating dose. Such a reaction may on occasion resemble that of "protein shock" in certain important features, but it differs from it in other essentials. To avoid confusion Auld[4] has suggested "pyrogenic" as a distinguishing term for the reaction under consideration, but this also is not without objection. Fever may follow the intravenous injection of a number of substances containing no protein, and further, the clinical improvement consequent on the injection cannot be ascribed to the short bout of fever produced thereby. A cumbersome but expressive and non committal title would be the "Intravenous Protein Reaction," and its practical application, "Intravenous Protein Therapy."

Types of Cases Benefited.

The diseases in which benefit by this form of treatment has been reported fall into four main groups:

1. Infective disease in which the causal organism is known and in which the vaccine is given intravenously both for its specific and possible "shock" effect; for example, typhoid fever, coliform infections of the urinary tract, and the septicaemias.
2. Infective disease in which the causal organism is unknown or not certainly determined. Here the protein is given solely as a non-specific factor in the treatment of the affection. This group includes rheumatic fever and multiple infective and rheumatoid arthritis.
3. Infective disease in which the causal organism is known but in which specific vaccine therapy is of little value. Here also a protein is given entirely for its shock effect; for example, pneumonia, gonorrhoeal arthritis.
4. Chronic disorders of doubtful or unknown etiology: psoriasis, pemphigus, lupus erythematosus, bronchial asthma.

In *typhoid fever* both sensitized and unsensitized typhoid vaccine has been used by several workers; Gay[1] summarizes their results, and adds 98 cases of his own, which show a mortality of 6.6 per cent. and 13 complications.

Gay states that the milder cases of the disease react better to the treatment than the more severe, but even the most severe will, in some instances at least, be benefited and even aborted. The usual dose of the initial injection was 150 million, and the dosage in successive inoculations was slightly increased in order to produce a similar reaction. He states that in typhoid fever the injection is followed in from fifteen minutes to an hour by a chill, which may last for a quarter of an hour, and is accompanied by a rise in temperature of one to three degrees, reaching its maximum within three hours and then falling, reaching normal or subnormal in about twelve hours, with sweating and usually improvement of such symptoms as headache, delirium, etc. If the temperature again rises over a period of two or three days, a slightly increased dose is given; if no striking result follows three or four injections at two or three days' interval, very little improvement from further treatment on the same lines is to be expected. The disease in one-third of the cases in his series was aborted, benefited in another third, while in the remainder it was unaffected; the liability to complications appeared to be diminished, but as a means of preventing relapses the injections are of little value.

Nolf[6] speaks highly of the value of peptone in the treatment of the typhoid fevers. He found morning injections more efficacious than those made in the afternoon, possibly because the patient was fasting, and acting on this hypothesis he is accustomed to allow his subjects nothing but water from the night before.

The reaction induced by peptone is proportional to the dose; in an adult 5 to 6 c.cm. of a 10 per cent. solution produce a rise in temperature in one to two hours lasting for several hours; 7 to 10 c.cm. have the same immediate effect, but possibly in addition a rigor followed by sweating and a rapid fall of temperature to normal. Other things being equal it seems that a complete reaction—that is, one accompanied by a marked and persistent fall in temperature—is more difficult to produce in the first ten days of typhoid than later.

Thus it would seem that in the early stages of the disease the best effects may be expected from sensitized vaccine and in the later from peptone; perhaps peptone and vaccine should be given together after the second week of the fever.

I have employed an autogenous coli vaccine intravenously in the treatment of *pyelonephritis* with good result on several occasions. One case of two months' duration in a man showed a tender swelling in the right renal region, pyrexia, and 10 per cent. of pus in the urine. After four injections the urine became free from cells and bacilli and was still sterile when last examined six months later.

A female, aged 38, was admitted to the medical clinic of St. Bartholomew's under Sir Archibald Garrod, with the history of a sudden onset of pain during, and frequency of, micturition five weeks previously, associated with haematuria and a temperature stated to have been 105°. Her right kidney was palpable and a little tender; she had red blood cells and an abundance of pus and coliform bacilli in the urine. As her condition did not clear up on alkalis and urinary antiseptics, she was given an autogenous plain vaccine intravenously. The first dose of 100 million gave rise to no abnormal sensations for five hours, but then mild shivering began, which lasted an hour, associated with slight headache and nausea; there was no abdominal pain, but some increase in frequency on micturition during the night—she was not quite comfortable again for forty-eight hours.

This reaction is mentioned in some detail as it shows that when an autogenous coliform vaccine is employed the onset of the reaction is apt to be considerably delayed in point of time. Two further injections were given to this patient at seven and five days' interval, and she was discharged free from pyuria and bacilluria.

In *pyogenic infections*, both local and general, vaccine may be administered by the intravenous route. In cases of septicaemia, using a plain or sensitized vaccine alone, it is difficult to produce a rigor; I am convinced on clinical grounds that the ultimate results are better, in really desperate streptococcal cases, when such a reaction occurs. As to the nature of a rigor I am in ignorance, but one is more likely to ensue if, in addition to the sensitized vaccine intravenously, anti-streptococcus pyogenes serum is given subcutaneously at the same time, possibly owing to the more rapid liberation of endotoxin. The improvement of the patient on such treatment may not be entirely recorded on the chart, for the general condition is bettered before the temperature falls—the dusky look is lost, the tongue moistens, the patient sleeps

and eats much better than before; indeed, in those cases which are going to respond a striking improvement in the general condition takes place in a couple of hours or so.

Local streptococcal infections are also often abated by intravenous vaccine.

A patient who had miscarried at the sixth week was admitted five days later to hospital, under Mr. Rawling, with a rapidly spreading cellulitis of both arms and the right calf and severe constitutional disturbance. Blood culture was negative. Twenty-four hours after an intravenous injection of 500×10^6 sensitized streptococcus vaccine her general condition was much improved; she had lost her pain and the redness and swelling had greatly diminished. A second dose, of 1,000 million, was given, and the inflammation in the left arm entirely disappeared, and in the right arm and leg it became localized with pus formation, which subsequently required draining.

In the febrile subject it is exceptional for the intravenous injection of streptococcus vaccine to produce a sharp rise in temperature, but in the afebrile a brisk thermal reaction may result.

A traumatic ulcer of the foot, consequent on a wound sustained in the Zeebrugge raid, which resisted subcutaneous vaccine and antiseptic treatment for five and a half months, healed rapidly after one intravenous injection of autogenous sensitized streptococcus vaccine. The dose of 100×10^6 produced a sharp reaction —shivering at the nineteenth hour and a rise of temperature which lasted for eighty hours, reaching its maximum of 104.2° at the twentieth hour.

I have given peptone intravenously in conjunction with sensitized vaccine subcutaneously in streptococcal septicaemia, and am convinced of its value in such cases. Nolf[7] maintains that intravenous injections of peptone not only check the course of streptococcal and staphylococcal septicaemias, but are also useful in severe local infections as a stimulant to the forces of defence.

In certain forms of *arthritis* great benefit may be derived from intravenous protein therapy. Here the vaccine is given entirely for a shock effect. The type of joint disease which responds best, in my experience, is the multiple infective arthritis for which no active source of primary infection or septic absorption is demonstrable. The patients are free from pyorrhoea, tonsillitis, sinusitis, chronic skin or urogenital infections, and present no other suggestion of intestinal toxaemia.

The disease syndrome comprises muscular wasting around, pain in, and deformity of, both smaller and larger joints, the main lesion being in the soft periarticular tissues rather than in the bones or cartilage, and osteophyte formation with erosion of cartilage characteristic of senile osteo-arthritis is not seen. These changes are prone to begin symmetrically in the proximal interphalangeal or other small distal joints before the larger articulations are involved. A low fever, increased pulse frequency, and slight enlargement of superficial lymphatic glands may accompany the joint changes. Albuminuria is a late development.

In such cases, provided treatment is instituted sufficiently early, I believe one is justified in saying that there is a good chance that the course of the disease may be arrested and the pain and fever abolished. In a certain proportion the periarticular swelling will be considerably reduced and the range of movement correspondingly increased, but it is obvious that when marked structural alteration has already occurred, leading to subluxation, deflection, etc., one cannot hope for complete anatomical restoration. The following are examples of those so treated by me:

A. P., male, aged 13, under the care of Dr. James Calvert. Eight months' duration; steadily progressive, involving both hands, wrists, ankles and knees, and the cervical spine. Was just able to walk with the aid of two sticks. Much pain. Evening temperature rarely above 100°, though occasionally 101° F. No albuminuria. After the fourth injection the note says, "he has lost pain in and stiffness of joints, and has abandoned his sticks when walking. Left knee can be straightened completely and the right nearly. Neck is improved. Both wrists less swollen, especially the left. Interphalangeal joints still much swollen, but swelling quite gone from ankles and very nearly from knees. No fever." Eleven injections were given altogether. He is now well, able to play football and the violin.

A. A., female, aged 29. (Dr. Morley Fletcher.) Twelve months' duration. Both hands, knees, elbows and shoulders. No albuminuria. Low irregular fever, not above 100° F. Much pain, especially at night. Given seven injections; the first of 100×10^6 T.A.B. was followed by a temperature of 104.2° F. and herpes of the lower lip. Fever and pain quickly stopped, swelling slowly disappeared, and she was able to sew and walk without pain or difficulty on her discharge.

E. J., female, aged 40. (Sir Archibald Garrod.) Seven years' duration. Both wrists, metacarpo- and inter-phalangeal joints and both knees. No fever. Four injections given. Joints stiff in morning, but not painful; much less periarticular swelling, and is able to sew. Middle finger of left hand, which was flexed, is now straight.

The next is a case in which an immediate improvement was not maintained.

Mrs. N., aged 60. Six years' duration. All joints of extremities involved. Walked with difficulty; unable to dress herself; much pain. Trace of albumin in urine. She was considerably improved for a couple of months, being quite free from pain and able to walk and dress herself without difficulty. But the latest report says the pain and swelling in the knees has returned.

In the following case the pain was relieved and the fever abated, but there was no obvious change in the swelling or deformity, and the patient remained bedridden.

A. B., female, aged 22. (Dr. Morley Fletcher.) Fourteen months' duration. All joints of extremities involved, with much flexion of knees and elbows. Low irregular fever and albuminuria. Twelve injections of T.A.B.; also given rheumatism "phylacogen" both subcutaneously and intravenously.

These cases may be supplemented by a brief summary of some of the records published by others.

Cecil[2] reports on 40 cases of rheumatic fever, acute toxic arthritis, and gonorrhoeal arthritis treated by intravenous injection of typhoid vaccine. In rheumatic fever and "non-specific" arthritis about 40 per cent. are stated to have recovered completely in two to ten days without salicylate, and most of the others were much improved. In rheumatic fever the average number of injections required was two, the dose varying from 30 to 100 million; salicylate was given if one or two doses of vaccine proved incapable of producing recovery. His seven patients with gonorrhoeal arthritis were benefited but little if at all. In one case of chronic gonorrhoeal arthritis and fibrositis marked improvement in the pain and stiffness followed the intravenous injection of a diphtheroid bacillus which I isolated from the urine after prostatic massage.

Peterson[8] records a case of "acute multiple arthritis" which received at intervals doses of typhoid vaccine intravenously on three occasions and was thereby much improved. The precise nature of the arthritis is not revealed.

Miller and Lusk[9] also report favourable results in the treatment of acute and chronic arthritis by the injection of foreign protein.

Nolf[5] considers that the addition of peptone intravenously to salicylate treatment renders the latter more efficacious in certain obstinate cases of articular rheumatism, and that peptone in association with salicylate enlarges the group of acute arthritides amenable to salicylate treatment.

Certain other acute infections have been treated, in some instances with success, by the intravenous injection of typhoid vaccine.

Squier[10] mentions two cases of influenzal pneumonia in which two transfusions with immune blood caused no reaction or change in the patients' temperature, pulse, respiration rate, or general condition, yet the injection of typhoid vaccine was followed immediately by a dramatic improvement.

Cowie and Bevan,[11] using typhoid vaccine in influenzal pneumonia, obtained no improvement in cases injected after the third day of the pneumonia, while all recovered who were so treated before the third day.

The skin lesions of psoriasis and lupus erythematosus may be relieved temporarily by injections of coli-typhoid vaccine. The condition apparently always relapses during the course of a few weeks or months.

Auld[12] has reported good results in the treatment of bronchial asthma by the intravenous injection of small doses of peptone. He states:

The cases best suited are those characterized by favourable intervals, with freedom from bronchitis and much attendant emphysema. The more recent the disease and the more regularly spaced the intervals the better the result. . . . Peptone stops the attacks over a period roughly proportionate to their former frequency. Generally speaking, the initial dose is 0.3 c.cm. of a 2 per cent. solution of Witte's peptone, increased by 0.2 c.cm. every fifth day until six injections have been given. Three or four more injections are to be given, employing in each the same dose as that given in the sixth injection. No reaction appreciable to the patient occurs. No injection is to be given during attacks, and when the latter occur at long intervals begin the treatment about three weeks before one is expected.

While I believe intravenous protein therapy to be of great value in certain carefully selected cases—more particularly of arthritis, the septicaemias, and coliform infections—I do most emphatically say that it is not a panacea for all ills; and even in those diseases in which it is of

use it is to be regarded solely as an accessory weapon in our armament for employment in conjunction with, not to the displacement of, other remedies.

I wish to express my thanks to those members of the staff of St. Bartholomew's who have allowed me to refer to patients who have been in their charge.

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THE POISON OF THE SPINY DOG-FISH.

A CASE OF ACUTE OEDEMA THE RESULT OF A PRICK BY A DOG-FISH, AND A PRELIMINARY NOTE ON THE POISON GLAND OF THE SPINY DOG-FISH.

BY

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TOWARDS the end of October, 1919, a fisherman came up to the Lowestoft Hospital complaining of a poisoned hand. There was a punctured wound at the base of the thumb

FIG. 1.—Section of gland showing ducts and vacuoles. A, Duct cut obliquely. B, Duct cut transversely. C, Vacuoles. D, Vacuoles bursting into inner end of duct. E, Duct. (From a micro-photograph by Dr. D. Hutchinson of a section by the author.)

Six hours previously he had been pricked by a dog-fish. The injury was followed by acute stabbing pain in the part which lasted four or five hours; the hand then began to swell, and when he arrived at the hospital there was great swelling and oedema of the back of the hand, and the front of the wrist and forearm were painful, tender, red, and oedematous.

This acute inflammatory oedema lasted for four days and for a time it seemed that suppuration would occur. On the fifth day the oedema at the back of the hand had subsided, but it was not until seven days had elapsed that the tenderness and swelling over the wrist had disappeared and the patient was convalescent.

The treatment adopted was to paint the hand and the front of the wrist and forearm with liniment and solution of iodine in equal parts and to apply hot fomentations.

Owing to the length of time that had elapsed since the injury no special treatment was applied to the wound; if the case had been seen earlier a weak solution of potassium permanganate would have been injected into the site of the puncture, as this is known to have an immediate effect on the pain and symptoms of poisoning in cases of the sting from the envenomed spines of the greater and lesser weever.

As this was the first case of injury by a dog-fish that had occurred in my experience, I was anxious to investigate the nature of the poison if any existed, and for this purpose I obtained a number of fresh spines, which at that time could be easily obtained from the steam trawlers which were landing large catches of dog-fish.

The Spines and Poison Gland of the Spiny Dog-fish or Spur-dog, Acanthias vulgaris (Gray, *Cat. British Museum*).

This, the commonest dog-fish, also known as the picked dog-fish, under which name it is described and pictured by Couch,[2] has a sharp, strong spine in front of each of the two dorsal fins. The usual length of the fish is from 18 in. to 2 ft.

Spiny dog-fish. After Cunningham.

The accompanying sketch is taken from Cunningham's *Marketable Marine Fishes*,[1] and shows diagrammatically the position of the two dorsal spines.

The anterior spine is the longer, is slightly curved, and measures an inch or more in length, while the posterior is nearly straight, and is shorter—from half an inch to three-eighths of an inch in length. The posterior aspect of each spine is grooved, the groove becoming more shallow towards the point.

When examined with the naked eye, each groove is seen

FIG. 2.—Section of gland showing basement membrane and columnar cells. A, Vacuoles. B, Commencing formation of vacuoles. C, Columnar cells. D, Basement membrane. (From a photograph by Dr. D. Hutchinson of a section by the author.)

to be occupied by a glistening, pearly-white substance, and towards the base there may be seen in its centre a small linear depression about one-sixteenth of an inch long, which is often discoloured, possibly by the presence of a secretion poured out by the glandular structure in the centre of which it lies.

This pearly-white structure was removed from the groove and teased on a slide; the teased gland showed follicles in which layers of epithelial cells could be demonstrated surrounding a central mass of cells and granular matter staining by the van Gieson method, just as does the secretion of the weever's poison gland. Small detached portions showed columnar cells against a basement membrane, and upon them layers upon layers of round and cubical cells, some vacuolated, and some distended with granular matter in which the nuclei alone were distinguishable.

I have cut a series of sections of the hardened gland, the details of which I hope to publish elsewhere. The gland consists of a number of follicles which discharge their contents into the groove. It commences at the junction of fin and groove, and here it is partially enclosed in a chitinous framework; it gradually becomes smaller and finer as the tip of the spine is approached, to the apex of which it does not reach for a variable distance, usually about one-eighth of an inch or more.

I have at present no experiments to publish on the nature of the secretion, but it seems a justifiable conclusion to attribute the acute pain and inflammatory oedema, the result of the prick by the spine, to some venom produced by this remarkable glandular structure lying in the groove.

As far as I am aware there is no previous description, in the literature of fish with poison organs, of a poison gland in Acanthias. Dr. Tate Regan, of the British Museum of

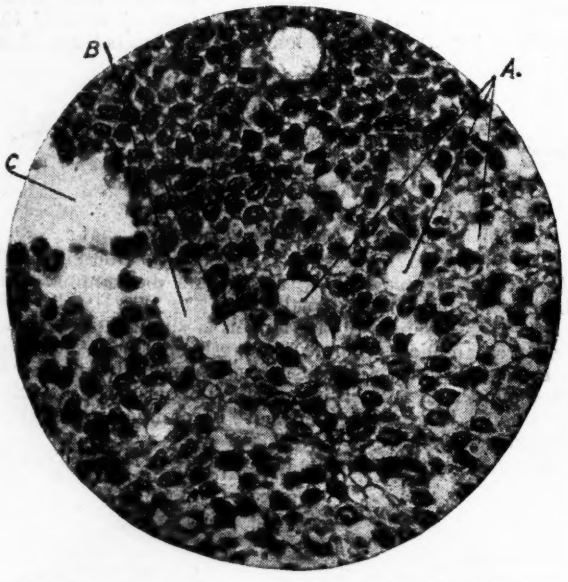

FIG. 3.—Section of gland stained with haemalum and counterstained by van Gieson method. A, Vacuoles. B, Vacuoles bursting into commencement of duct. C, Duct.

Natural History, kindly referred to such sources of reference as were unavailable to me, and to him my thanks are due for always extending ready help and advice to those engaged in research.

Description of the Gland.

The histological appearances of the gland lying in the grooved spine of the spur-dog are as follows: The two low-power microphotographs show the general structure, and the high-power the changes in the cells which take place during secretion. That portion of the gland lying deepest in the groove consists of cylindrical cells on a basement membrane. Superficial to these cells are several layers of round cells the nuclei of which stain

FIG. 4.—Section showing root of fin where it joins the base of spine (semi-diagrammatic). A, Gland dipping into recesses formed by (B) chitinous processes at base of fin. (The spine is not shown as the base of the fin is cut off where it joins the groove.) C, Large pigment cells. D, Connective tissue joining chitinous processes to (E) cartilage of the fin.

readily with haemalum, and in some areas the nuclei show marked evidence of activity, as exemplified by the presence of mitotic figures. Well-marked ducts dip into the substance of the gland, around which the cells become definitely flattened. These three types of cell are obviously transition forms of the same cell. In the neighbourhood of the duct areas are seen in which the cells are breaking down or disintegrating so as to give rise to a sponge-like appearance, and in these areas are also seen round lacunae in which phantoms of pale cells may be distinguished, and in one section one can see one of these lacunae bursting into the apex of a duct into which it is apparently discharging its contents.

If my observations are confirmed, the dog-fish adds one more to the examples of fish with poison organs, in the ranks of which the sting-ray has so recently found a place after centuries of scientific doubt.[3]

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METASTATIC STAPHYLOCOCCAL INFECTION OF THE KIDNEY.

BY

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AN account of the following case may be of interest as illustrating infection of the kidney following upon operative interference with an infected wound of the forearm, the difficulty of making an early and accurate diagnosis of the condition, and the success of treatment by an autogenous vaccine.

A pensioner, aged 32, had undergone amputation through the lower third of the right thigh, and had an old gunshot wound of the left forearm, with an ununited fracture of the ulna in its upper third. He was wounded in both these situations on November 10th, 1917, in France, and the leg had been amputated at the casualty clearing station within a day or two of his wound; the forearm was cleaned and splinted. The subsequent history of the thigh is that it was reamputated and sutured at a general hospital in France on December 8th, 1917, and an abscess of the stump drained in January, 1918. An artificial limb was supplied in May, 1918, and the stump had not given any further trouble.

The fractured left forearm was put in good position, and the wound sutured in January, 1918, at a hospital in England; though the wound apparently healed at this time, the ulna remained ununited, and for this disability he was admitted as a pensioner to the Special Military Surgical Section of the 1st Northern General Hospital on December 19th, 1918.

On February 5th, 1919, the ends of the ulna were freshened and the bone plated; the wound subsequently became septic. In the beginning of May the patient came under my care, and, as a sinus was still present in the forearm leading down to the site of operation, and *x*-ray examination showed that union of the bone was apparently proceeding satisfactorily, I operated on May 6th, excised the sinus completely, removed the screws and plate, applied bipp to the wound, and closed it completely without drainage.

The wound healed by first intention, and has given no trouble since; but on the evening of May 19th the temperature, which had been normal since the third day after operation, rose to 100° and continued to rise in "step-ladder" fashion till, on the evening of May 23rd, it reached 104.4°. This pyrexia was accompanied by malaise, slight vomiting, vague pain in the bladder region, frequency of micturition, and strangury; the patient stated that on May 19th he had "passed a few drops of blood with the urine," but, as this specimen was not saved, the statement could not be confirmed. Though he felt "shivery" there was never any actual rigor. No abnormal physical signs could be detected in any system, and he was put on light diet and a simple diaphoretic mixture.

Naked-eye and chemical examination of the urine revealed no abnormality; but on May 23rd a trace of albumin and some pus were present, and on the following day a specimen was taken for bacteriological examination. Hexamine, gr. x thrice a day, with large quantities of fluid, was then prescribed. No abnormal physical sign was detected till, on May 26th, he complained of pain in the left loin, and bimanual palpation of the left kidney region elicited marked tenderness, though no tumour could be made out. The laboratory report received on May 27th stated: "Few red corpuscles and a fair number of pus cells present; no tubercle bacilli or *B. coli* detected; *Staphylococcus pyogenes aureus* present."

The diagnosis of acute metastatic pyelonephritis could now be made. A second specimen of urine was sent to the bacteriologist for the preparation of an autogenous vaccine.

Meantime the temperature had been gradually falling since May 26th, reaching 99° or 100° in the morning, but rising to 102° to 103° in the evening; and on May 29th the daily range settled down to between 99° and 100°. The second laboratory report was identical with the first, except that pus was present in greater quantity; and, pending the preparation of the autogenous vaccine, I gave 125 million of a stock staphylococcal vaccine on June 3rd; this produced a slight general reaction; no reaction followed 250 million given on June 7th and 500 million on June 11th.

The patient's general condition meantime was still unsatisfactory; he was anaemic and very weak, suffered from profuse sweats, loss of appetite, and vomiting after practically every meal. The hexamine was discontinued on June 11th, as it was thought that it might be the cause of the vomiting. Kidney tenderness was still present, but no tumour or enlargement of the organ could be made out.

The sickness improved, but recurred on June 16th, when a mixture containing bismuth and soda with nux vomica was ordered. On this day also the administration of the autogenous vaccine was started, 250 million being given; only a slight general reaction followed (evening rise of temperature to 100°). The pyrexia had altogether subsided by June 20th, but culture of the urine still revealed the presence of staphylococci; the general condition showed signs of slow improvement. The autogenous vaccine was continued at weekly intervals, in gradually increasing doses, till a dose of 1,000 million was reached on July 28th, and repeated on August 2nd; the vaccine treatment was then discontinued.

As on June 28th patient still complained of left lumbar pain, and the sickness had disappeared, he was again ordered hexamine gr. x, with acid sodium phosphate gr. xv. This was continued till the end of July, when the patient had completely recovered, and was able on August 6th to begin work in the curative workshops of the hospital.

Since that date the renal symptoms have not recurred; the urine has remained free from pus. The left ulna has firmly united and the patient has full use of the forearm.

Although the diagnosis of this condition was for some days very difficult, I think there can be no doubt, in view of the laboratory findings and the few physical signs which eventually developed, that the diagnosis finally reached was correct. During the later period of the patient's illness it was of interest to note the correspondence which started in the *Lancet* of June 7th, 1919, and continued for the three following weeks, on "Epidemic perinephric suppuration"; and in some ways this case resembled cases instanced in that correspondence. But, as in the cases of perinephric abscess, it was stated that it is rare to find pus in the urine, and as in my case there was no evidence of any abscess in the loin, that diagnosis could almost certainly be ruled out; and the symptoms and signs of my case were practically identical with those of acute haematogenous pyelonephritis described by Thomson Walker in Choyce's *System of Surgery*. The primary focus of infection was undoubtedly the sepsis in the forearm, and the metastasis followed operation on this site. But it is remarkable that the pyelonephritis should have followed only after the second operation, and that, by the time the pyelonephritis developed, the primary focus, never clinically of great intensity, had cleared up. Horder, in the correspondence referred to, states that "the point of primary infection may be easily overlooked" (apparently owing to its slight character) in cases of perinephric abscess, so that staphylococcal metastasis in or around the kidney is known to arise from a primary focus so slight that its discovery may require careful investigation. Pasteur, in the same correspondence, states that "staphylococcal infection of this type (*S. aureus*) never seems to give rise to staphylococcal septicaemia." Though there was no evidence of septicaemia in my case, it is unfortunate that cultural examination of the blood was not made when the pyelonephritis developed, nor of the pus from the forearm at the time of operation. A blood count might also have been of assistance in the diagnosis.

Finally, it is interesting to note how well the condition cleared up on treatment with an autogenous vaccine. Thomson Walker (*loc. cit.*) states that such treatment is suitable only for chronic cases, but in this acute case it answered remarkably well. Herringham (*Kidney Diseases*, p. 302) describes a case of acute pyelonephritis due to a coliform bacillus (which, he states, is the commonest causal organism of such conditions) treated by an autogenous vaccine which produced gradual improvement; but three months after the onset there was still a slight amount of pus in the urine, and a considerable number of bacilli; so that the patient could not be considered cured. The cases, however, are scarcely analogous, and there is no doubt that in this staphylococcal case the vaccine treatment produced a complete cure.

I have to thank my Commanding Officer, Lieut.-Colonel D. Wells Patterson, O.B.E., R.A.M.C.(T.), for permission to publish this case; and Dr. P. C. W. Laws, bacteriologist to this hospital, for the bacteriological investigations, and the preparation of the vaccine.

PROFESSOR AUGUST BIER has addressed a memorandum to the Prussian authorities pointing out that as the abolition of compulsory military service robs the growing generation of beneficial physical training, compulsory physical training for all young men should be enforced, beginning, if possible, in early boyhood. He advocates the inclusion of physical exercises by the University of Berlin as a compulsory subject.

VOLVULUS OF THE CAECUM: DOUBLE OBSTRUCTION.

BY

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In view of the recent article by Sir Arbuthnot Lane[1] on the evolution of disease, I think the following case worthy of note by reason of its rarity, the unusual way in which it was produced (only fully recognized at autopsy), the surprising condition of obstruction of the small and large bowel at two distinct sites, and the associated atypical gastric symptoms over a period of years.

Lieutenant R.N.R., aged 33, gave a history which was a little meagre owing to his general condition. For a period of some years he had had attacks of "indigestion," never sufficient to cause him to report sick. Associated with this was a marked intestinal stasis and obstinacy of the bowels; pain and discomfort after meals, with occasional vomiting, were quite common features. One night he was suddenly seized with acute abdominal pain, at first spasmodic and later continuous, with vomiting of everything taken. He was transferred to me twenty hours after the onset of the attack.

Condition on Admission.

He was in extreme pain, with all the symptoms and signs of an acute abdominal catastrophe. The abdomen was full, rigid, distended, and tender. Fluid in the flanks and the complete absence of liver dullness suggested, in view of the prior gastric symptoms, perforation of a viscus. The bowels had been relaxed prior to the sudden onset of the acute pain.

The vomit on arrival was not faecal, but consisted of stagnant stomach contents. The temperature was 100°, the pulse 120 to 130, feeble and thready.

Operation.

A right paramedian incision was made in the epigastrium. The stomach and duodenum were found to be normal. The incision was enlarged downwards, and a large black balloon emerged from the abdomen. This consisted of the much distended caecum and ascending colon, which were turned over towards the middle line as on a hinge at the inner border, forming a definite volvulus. The transverse colon was empty, the small gut was moderately distended. The hepatic flexure, being obviously the seat of obstruction, was explored. There was an acute "kink," and on the inner side of the "kink" a mass, first thought to be malignant, but on section found to be a calcareous gland outside the lumen of the gut. Further exploration and interference being impossible, a Paul's tube was tied into the caecum, the contents of the colon drained, and the abdomen closed.

After-Treatment and Result.

The colon drained freely, and the patient's general condition improved for the first twenty-four hours. The liver dullness returned immediately. Then symptoms of further obstruction came on, the abdomen became distended, vomiting returned and became faecal. In spite of all treatment the patient died forty-eight hours after operation.

Post-mortem Examination.

The caecum and ascending colon were completely deflated. The caecum was very mobile, and had a definite mesentery. The small gut was distended in its entirety, a condition not present at the operation.

The hepatic flexure was a potential tube by virtue of the pull from outside at the site of the gland noted, rather than by any organic obstruction. From the calcareous gland there stretched a thick, organized adhesion passing across and adherent to the anterior leaf of the mesentery, and fixed firmly to the ileum about two inches from the ileo-caecal valve. At this point the small gut was acutely kinked in a similar manner to that at the hepatic flexure. All other organs were apparently normal.

There is no doubt that the original lesion in this case was a tuberculous affection of the mesenteric glands leading to a strong adhesion between the hepatic flexure and the last two inches of the ileum. The early stages of this were noted in the atypical gastric symptoms due to an ileal "kink" and obstruction to the ileal efflux, so often mentioned in the literature. Some indiscretion of diet, followed by decomposition of the contents of the caecum produced a "balloon" of this viscus, which, being mobile, rose up, turned on a hinge and became a volvulus, producing further obstruction at the already kinked hepatic flexure.

Relief of this obstruction and the replacing of the caecum away from the ileum brought into force the second kink—that in the ileum from which ensued the intestinal obstruction. I think that this was not a paralytic distension of gut, but originated from the ileal obstruction.

[1] *Lancet*, December, 1919.

THE USE OF IMMUNIZED BLOOD DONORS IN THE TREATMENT OF PYOGENIC INFECTIONS BY WHOLE BLOOD TRANSFUSION.

BY

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SEVERE septicaemia, generally of streptococcal origin, was a wound complication which was only too frequent and fatal during the war.

The usually desperate condition of such cases and their high mortality made an urgent appeal for attempts at a cure, and almost any method which promised success worthy of trial. The marked benefit attendant upon whole blood transfusions which were being performed in large numbers in No. 8 General Hospital in the summer of 1918, suggested the use of immunized blood donors for transfusion in cases of septicaemia and chronic wound infections.

The large number of transfusions and the wide field for selection of blood donors afforded by numerous light duty patients gave an unusually favourable opportunity for a trial of the method. This so-called "vaccination" transfusion had been tried by Ransom Hooker[1] in five cases of staphylococcal septicaemia, three of which recovered. A successful result had been reported by Heyd[2] in a case of endocarditis with a positive *Streptococcus viridans* blood culture, and McClure and Dunn[3] had experienced satisfactory results with cases of typhoid fever.

The hypothetical advantages envisaged in the present series by the use of this method were:

1. The antibacterial mass action obtained by the use of a large volume of immune serum—for example, 900 c.cm. as against the 20 to 40 c.cm. of antistreptococcal serum usually employed.
2. A "protein shock therapy" on a considerable scale, and the use of a homologous serum.
3. The possible "sensitizing" of the patient towards a vaccine by means of the immune serum, the same vaccine being used for the patient as was employed for the production of immunity in the blood donor.
4. The replacement of red blood cells in the circulation of the patient instead of those broken down by the haemolytic activity of streptococci, thus directly combating the anaemia caused by the infection.

Methods Employed.

1. *Blood donors* were light duty patients. All those selected were volunteers, who fully understood what was necessary and performed their part with enthusiasm. Their age varied from 20 to 36. Their medical history was investigated, and only those free from malaria and trench fever or any recent infectious disease were taken. Wassermann reactions were done in all cases and were negative in all the donors selected.

2. *Blood matching* was performed by the method of Lee.[4] For donors only men of Class IV (universal donors) were taken. The blood of the recipients was similarly tested before transfusion to determine their class.

3. The *vaccine* employed for the immunization of the donors was a polyvalent one prepared as follows:

Purity of culture of the various strains having been determined by broth and agar cultures, the strains were inoculated into 5 c.cm. broth containing 1 c.cm. fresh sterile human serum. They were incubated at 37° C. for twenty-four hours, in which time sufficient growth was usually obtained. The tubes were centrifuged at high speed and the supernatant fluid was pipetted off and 5 c.cm. sterile saline added. The emulsion was well shaken and allowed to stand a quarter of an hour to permit large particles to sediment. Upper layers of fluid were taken for the vaccine, which was sterilized by cold in the ice chest, with the addition of 0.1 c.cm. of 1 in 20 carbolic acid for each 1 c.cm. of vaccine. The vaccine was then incubated twenty-four hours, tested for sterility, and diluted to required strength. The vaccine was estimated by Wright's method or in the counting chamber.

Strains of streptococci from the following series were employed for vaccines, together with one strain of staphylococcus:

Series 1:
1. Fatal streptococcal infection in a case of cerebro-spinal fever.
2. Wound of knee-joint. Pure culture from fluid from joint.
3. Wound of knee-joint. Pure culture from pus from joint.
4. Fatal septicaemia following gunshot wounds. Blood culture.
5. *Staphylococcus aureus* from case of furunculosis.

Series 2:
1. Streptococcal septicaemia following gunshot wounds. Blood culture.
2. Gunshot wound of knee. Pure culture from pus from joint.
3. Fatal streptococcal septicaemia. Blood culture.
4. Gunshot wound of chest. Isolated from haemothorax.
5. Gunshot wound of leg and fatal septicaemia. Isolated from thrombus in femoral vein and by blood culture.
6. Gunshot wound of chest. Isolated from haemothorax.

TABLE I.—*Bacteriology of Strains Employed.*

	Lactose.	Cane Sugar.	Salicin.	Mannite.	Inulin.	Litmus Milk.		Length of Chain.	Haemolysis.
						Acid.	Clot.		
Series 1:									
1	+	+	+	+		+	0	Medium	+
2	+	+	−	−	−	+	0	Short	−
3	+	+	−	+	−	+	+	Short	−
4	+	+	−	−	−	+	0	Medium	+
Series 2:									
1	+		−	+		+	0	Short	+
2	+		−	+		+	0	Short	−
3	+		−	−		+	0	Medium	+
4	+		−	+		+	0	Medium	−
5	+		−	−		+	0	Medium	+
6	+		−	+		+	+	Medium	−

Strength of Vaccine.—Series 1: 60 million streptococci and 105 million *Staphylococcus aureus* per 1 c.cm. Series 2: 120 million streptococci per 1 c.cm.

Dosage.

The total number of injections given to each donor was on the average 6, the greatest number being 9 and the least 3, the injections being given at intervals of five days. The amount of the final dose was on the average 120–150 million streptococci and 400 million staphylococci where a mixed vaccine was used. The period of immunization was about one month or more. None of the donors were the worse for the administration of the vaccines and some appeared to be benefited. The lapse of time between the last dose of vaccine and the giving of blood was on an average five days, but varied from one to thirty-one days, according to the exigency of circumstances.

Determination of Immunity.

The necessity was felt of an accurate method for rapidly determining the changes in the immunity reaction, both in the donors in response to the vaccine, and in the patient before and after the transfusions and during the course of the treatment. Complement fixation tests were not practicable. Various other methods were tried, such as estimates of the haemophagocytic index and increase in the agglutinins in the serum. No sufficiently accurate results were however obtained, and the attempt was abandoned. In this respect the investigation is lacking in accurate data. Ransom Hooker (loc. cit.) states the want of a method for determining the immunity response under these conditions.

Transfusion was in all cases performed by means of the Kimpton paraffined tube with the usual technique. The amount of blood transfused was generally 900 c.cm., but varied from 450 c.cm. upwards.

The total number of cases treated by transfusion with the blood of immunized donors was nine, of which six were acute septicaemia and three severe suppurative wounds of the thigh.

Following is an account of the cases mentioned in Table II.

A. ACUTE INFECTIONS.

CASE 1.—*Septicaemia: Haemolytic Streptococcus: Complete Recovery.*

Lieut. W., aged 22; gunshot wound of chest and right arm, July 23rd, 1918.

Admitted July 25th. Condition: Wounds very foul; temperature high. Wounds opened up and damaged muscle cut away. Fractured right humerus above surgical neck. Large foreign body removed from under right pectoralis major. Axillary and brachial vessels and nerves exposed for about three

TABLE II.—*Analysis of Cases.*

Class of Case.	Bacteriology (Blood Culture).	Result.
A. *Acute Infections.*		
1. Septicaemia	Haemolytic streptococcus	Comp'ete recovery.
2. Septicaemia	Ditto	Died.
3. Septicaemia	Ditto	Died.
4. Septicaemia	Ditto	Died.
5. Septicaemia	Ditto	Died.
6. Septicaemia	Staphylococcus	Died.
B. *Chronic Infections.*		
7. Acute suppurative arthritis of right knee-joint: gunshot wounds of leg	Pus from joint; streptococcus—pure culture	Rapid recovery.
8. Chronic suppurative wounds of left thigh: fractured femur	Pus from wounds; mixed streptococci and staphylococci	Rapid recovery.
9. Wound of right buttock: fractured neck of femur	—	Rapid recovery.

Mortality of streptococcal cases (Cases 1–5) = 80 per cent.; of all cases of septicaemia (Cases 1–6) = 83.5 per cent.

ches. Wounds packed with Dakin's gauze. July 25th to August 8th: Temperature 100° to 102°. Thrombosis left femoral artery. On August 9th there was secondary haemorrhage from third part of right axillary artery; rapidly controlled and vessel tied.

Transfused; ordinary donor, Class IV, amount 600 c.cm. August 11th: Temperature 105° F. and remaining high. August 15th: Conscious but drowsy; pale and anaemic, tremulous and twitching, occasional delirium. Left thigh very swollen. Blood culture positive—haemolytic streptococcus, medium length of chains. Blood group, Class IV.

August 18th: Apparently moribund, delirious, twitching, Hippocratic facies, sordes on lips. The following day transfused, immunized donor, Class IV, 600 c.cm. The donor had received five injections—highest dose 90 million streptococci, 150 million staphylococci; blood donation eleven days after last injection. August 20th: Slept quietly after transfusion, conscious on waking, tremor and twitching absent, colour improved, appetite improved. August 22nd: Condition again becoming unsatisfactory; marked tremor, drowsy, semi-conscious, incontinence of urine and faeces.

August 23rd: Transfused; immunized donor, Class IV, 800 c.cm. The donor received five injections—highest dose 90 million streptococci, 150 million staphylococci; blood donation fifteen days after last injection.

August 24th: Result of transfusion again very good; slept well, delirium and tremor absent, appetite returned. Satisfactory condition maintained on August 26th, but on the following day his condition was again grave; temperature high, unconscious and delirious; marked oedema of left ankle and leg from thrombosis of vessels.

August 28th: Transfused; immunized donor, Class IV, 900 c.cm. The donor had received six injections—highest dose 120 million streptococci; blood donation two days after last injection. Result again excellent; slept well, consciousness recovered, free from twitching, good appetite. His condition still good on August 31st, when an autogenous vaccine was given.

September 3rd: Thrombosis of left femoral vein extending; veins prominent on abdomen, great oedema of left thigh and leg. September 5th: General condition improved; drowsy, but quite conscious; autogenous vaccine. On the 9th he had a rigor, but general condition was satisfactory. On the 13th he was better, temperature remaining on lower level; autogenous vaccine.

September 16th: Autogenous vaccine. Condition improved; thigh softer and less swollen. September 21st: Condition unchanged; autogenous vaccine.

September 27th: Thrombosis of right femoral vein and swelling of right leg and groin; abscess in right arm evacuated and drained. Autogenous vaccine was injected on this date and again on October 3rd. On the 4th a large abscess of the left thigh was evacuated and drained; the right leg and foot were swollen from thrombosis of the right femoral vein.

Autogenous vaccine was injected on October 7th and 12th, when the patient's condition was much improved. A blood culture taken four days later proved sterile. October 17th: Autogenous vaccine; condition still improving. The temperature was normal on the 19th, and on the 22nd the last dose of vaccine was given. On November 1st the drainage tubes were removed from the right arm, and two days later he was evacuated to the United King lom, the temperature having been normal since October 19th; pulse about 100.

Subsequent history, 1919: Alive and well and walking with the aid of a stick.

CASE 2.—*Streptococcal Septicaemia: Death.*

Pte. T.; gunshot wound of thigh, compound fracture of left femur, October 18th, 1918. Injured portion of left femoral artery ligatured and excised at casualty clearing station.

Admitted October 28th with gangrene of left foot, suppurating fracture of left femur, and acute bilateral bronchitis. Amputation; bipp; sutured. The same day secondary haemorrhage occurred, and the left common femoral was tied. Transfusion 900 c.cm. from ordinary donor. A blood culture on November 1st resulted in the growth of a haemolytic streptococcus. Blood group, Class IV.

November 2nd: Temperature 104°–105°, rapid respiration, tremor, muttering delirium. Transfused 900 c.cm. from immunized donor, Class IV. The donor had received eight injections—highest 150 million streptococci, 160 million staphylococci; blood donation three days after last injection. On the following day the patient died in coma.

Autopsy.—Thin blood-stained oedema below subcutaneous tissue near wound of thigh. Left ilio-psoas muscle soft and oedematous. Spleen enlarged (17 oz.) and contained recent infarcts. Parenchyma necrotic. Liver large, with pin-point multiple abscesses. Lungs: Subserous petechiae, nodular abscesses along posterior borders from which *B. welchii* was isolated. The pleural and pericardial cavities contained blood-stained fluid.

CASE 3.—*Streptococcal Septicaemia: Death.*

Pte. B.; gunshot wound of thigh, October 13th, 1918; fractured left femur.

Admitted October 16th. Temperature 99° to 101°. Wounds apparently clean; bipp and suture above knee. On October 28th the wounds were broken down; temperature 102° to 104°. Three days later metastatic abscess of hand opened; urine contained albumin, blood, and granular casts. A blood culture, on November 2nd, produced a growth of a haemolytic streptococcus. Blood group, Class IV.

November 3rd: Drowsy, semi-delirious, twitching; urine scanty, casts numerous. Transfused (800 c.cm.) from immunized donor, Class IV. The donor had received seven injections—highest 150 million streptococci, 160 million staphylococci; blood donation four days after last injection. The following day the patient's condition very bad—tremulous, respiration rapid.

On November 5th he was again transfused (900 c.cm.); immunized donor, Class IV. The donor had received seven injections—highest 150 million streptococci, 360 million staphylococci; blood donation one day after last dose. The patient died two days later.

Autopsy.—The left pleural cavity contained 20 oz. of turbid fluid. Left lung collapsed; bronchitis both lungs. The heart showed an old fibrous nodular vegetation on the mitral valve. Kidneys showed a chronic mixed nephritis with cysts and a calcareous patch in the left kidney. The spleen showed interstitial haemorrhages.

CASE 4.—*Streptococcal Septicaemia: Death.*

Pte. P.; gunshot wound of right knee, fractured left femur, September 30th, 1918.

Admitted October 10th with single suppurating anterior wound of left thigh; oblique fracture of middle third of left femur in fair position. Wound of right knee partly sutured, partly packed with flavine gauze; bipp. Left leg, Carrel's tubes and bent Thomas's splint.

On October 26th posterior drainage to left thigh. On the 28th the temperature rose rapidly to 104° and remained high; pulse rate 160. On November 6th blood culture resulted in the growth of a haemolytic streptococcus. Blood group, Class IV. Condition very grave—pallid, semi-conscious, sordes on lips, dry furred tongue; very tremulous and unable to speak; wounds clean. The following day he was bled 500 c.cm. and then transfused (immunized donor, Class IV), receiving 900 c.cm. The donor had received seven injections—highest dose 150 million streptococci, 360 million staphylococci; blood donation three days after last dose. The next day the temperature was a little lower, but his condition still very bad; semi-conscious and unable to speak.

On November 10th the temperature rose to 106°; pulse 160. The patient died on the 11th.

Autopsy.—Turbid fluid in right pleural cavity, blood-stained fluid in left. Lungs showed tuberculous, caseous and cicatricial, foci at apices; recent small infarct at base of left lower lobe. Spleen soft and friable.

CASE 5.—*Streptococcal Septicaemia: Death.*

Capt. L., aged 22; gunshot wound of right leg, November 1st, 1918. Vessels tied; supracondylar amputation right thigh.

Admitted November 5th; temperature 101°, pulse 86. The next day the stump was cleaned with spirit and flavine; delayed primary suture. On the 7th the temperature rose to 104°, pulse 120; stump clean. Blood culture showed growth of a haemolytic streptococcus. Blood group, Class IV.

On November 13th his condition was fair: conscious, not tremulous, no marked pallor. Temperature 103°, pulse 120; stump clean. The following day he was bled 200 c.cm. and then transfused; immunized donor Class IV. The donor had received eight injections—highest dose 150 million streptococci, 400 million staphylococci; blood donation four days after last injection. Patient slept well after the transfusion, but there was no marked improvement.

November 16th: Pleural effusion at base of right lung; fluid from right pleural cavity gave pure culture of a streptococcus with same fermentation reactions as were given by the organism obtained by blood culture. On the 17th he was given a polyvalent vaccine—the same as was used for immunizing donor. The next day there was a marked fall of temperature, and his condition showed great improvement. On the 19th the tempera-

ture was normal, respiration more rapid but easy; slept well. On the 20th, temperature rising, respiration rapid; left-sided parotitis. Vaccine given. The next day he was delirious and very restless; respiration increased. On the 22nd he was better—conscious, parotitis diminishing, no cough or pain in chest. On the 24th the respiration was rapid and rather laboured; 300 c.cm. purulent fluid removed from right side of chest. The patient died the next day.

Autopsy.—Left pleural cavity contained 60 oz. of purulent fluid; right 30 oz. Lungs collapsed; some small abscesses with bronchopneumonia at base of right lung; three small infarcts at base of left lung. Spleen large, soft and friable.

CASE 6.—*Staphylococcal Septicaemia: Death.*

Lce.-Cpl. F., aged 21; gunshot penetrating wound of right chest, August 1st, 1918.

Admitted August 5th with basal pleurisy of left side of chest. *X* rays showed foreign body on left side under left dome of diaphragm; no haemothorax. Entry wound right side of chest. Temperature 102° to 104.2°.

On August 28th abscess of liver drained along track of foreign body; about 4 oz. of purulent fluid in cavity. On September 2nd patient was semi-delirious, emaciated and pale; temperature 102° to 104°, pulse 130. Blood culture gave a growth of *Staphylococcus pyogenes* in pure culture. On September 5th he was transfused (900 c.cm.) from immunized donor, Class IV. The donor had received seven injections—highest dose 155 million staphylococci, 150 million streptococci; blood donation five days after last injection. The next day patient's condition was still bad; semi-conscious. He died on September 7th.

Autopsy.—Fragment of metal (weight 9 grams) lying in gastro-splenic omentum; partly closed suppurating track through liver. Spleen much enlarged through pressure on splenic vessels. Pylephlebitis. Semi-purulent fluid in right ventricle; recent vegetations on auricular surface of cusps of tricuspid valve; *Staphlococcus pyogenes* isolated from heart blood of left ventricle.

B. CHRONIC INFECTIONS.

CASE 7.—*Suppurative Arthritis (Streptococcal): Rapid Recovery.*

Pte. K., aged 20; gunshot wound of right knee and multiple wounds, July 7th, 1918. Foreign body removed from external condyle of right femur; joint not involved; bipp.

Admitted July 7th with suppurative arthritis of right knee-joint. Joint laid open and drained; leg oedematous below right knee. Temperature 104°; drowsy. Pus from joint gave pure culture of streptococcus. Blood group, Class IV.

On July 12th he was transfused (450 c.cm.) from immunized donor, Class IV. The donor had received five injections—highest dose 90 million streptococci, 150 staphylococci; blood donation five days after last injection. Two days later patient's condition satisfactory; autogenous vaccine given. On July 18th the temperature was normal; condition improved; wounds very clean and healthy. On the 19th autogenous vaccine again given. Two days later abscess in calf opened. On July 31st the wounds were healing rapidly; general condition good, temperature normal; vaccine discontinued.

CASE 8.—*Chronic Suppuration (Wound Sinus): Mixed Infection: Rapid Recovery.*

Pte. P., aged 20; gunshot wound of left thigh, August 23rd, 1918. Perforating shell wound above left knee-joint; compound fracture of femur. Wounds freely excised; Carrel's tubes and gauze packs.

Admitted August 25th. Wounds appeared clean; completely closed by delayed primary suture. On September 17th one large loose fragment of bone was removed; backward, displaced lower fragment of femur suspended by silver wire loop.

October 28th: Sutured wounds broken down ten days after suture. Large open sinuses discharging profuse thick greenish pus. Patient very pale, anaemic, and rather emaciated. Blood culture sterile. Pus from wound yielded streptococci, medium length chains, and staphylococci. The following day he was transfused (900 c.cm.) from immunized donor, Class IV. The donor had received nine injections—highest dose 150 million streptococci, 250 million staphylococci; blood donation twenty-six days after last injection. The transfusion was followed by a sharp rise of temperature, which immediately returned to normal. Patient looked and felt better.

On November 2nd a polyvalent mixed vaccine was given, similar to that used for immunizing donors; no marked reaction. On the 5th, sinus in thigh opened up. On the 7th, polyvalent mixed vaccine again given; temperature down to normal. On the 10th the discharge from sinuses was much less. Polyvalent mixed vaccine was again given on the 12th and 17th, when the condition was much improved. The last dose of vaccine was given on the 22nd, when the wounds were very clean and discharge slight; temperature normal.

CASE 9.—*Chronic Suppuration (Wound Sinus): Mixed Infection; Rapid Recovery.*

Lieut. L., aged 29; gunshot wound of right buttock, November 1st, 1918.

Admitted November 7th with penetrating wound of right buttock and right inguinal region; bulging of right buttock. On the 13th the posterior wound was discharging thick greenish pus. *X* rays showed fracture of right acetabulum. Posterior wound incised; cavity granulating; fragments of bone removed and bare bone felt. Two days later wound enlarged obliquely down and inwards; fairly large infected cavity; posterior half of wound sewn up; bipp and gauze packs.

On December 14th *x* rays showed necrosis of head of right femur. Temperature swinging. Head of right femur excised; through drainage established. On December 24th the patient looked anaemic and thin; temperature 102°. Blood culture sterile. Transfused (900 c.cm.) from immunized donor, Class IV. The donor had received five injections—highest dose 120 million streptococci, 480 million staphylococci; blood donation twenty-four days after last injection. The next day the temperature was lower and patient's condition satisfactory. He continued to improve. On December 31st he was again transfused (900 c.cm.) from a donor of the same class as before who had received five injections—highest dose 120 million streptococci, 960 million staphylococci; blood donation thirty-one days after last injection. The patient was evacuated to England on January 8th, 1919; colour good and general condition much improved: temperature 98° to 100° F.

DISCUSSION.

A superficial examination of the above results obtained by the use of immunized donors in septicaemia suggests that the method is not of any value. If, however, the case and *post-mortem* reports are analysed it will be noted that in all except two cases the conditions of the patients were absolutely hopeless before the transfusions, and that they were, indeed, practically moribund. In the first case, which appeared equally desperate, a completely successful result was, however, achieved, a result which alone was worth the trouble of immunization, and justified the trial of the method. Without personal knowledge of the case a just estimate of the result obtained in this instance can hardly be conveyed. In the previous experience of none of the observers of the case has a patient in such a condition recovered.

It is true that cases of septicaemia due to infection by haemolytic streptococci may recover by their own powers, as in one case investigated by the writer which had no special treatment; but the patient in this instance never presented very grave symptoms. In all except two instances the method was adopted as a last resort, too late for any hope of success.

Some details of technique suggest themselves as a result of the trial of this method. The treatment should be commenced as early as possible. Donors of the same group as the patient are probably to be preferred.

The transfusion should be done very slowly to prevent a sudden overfilling of the venous system with a consequent transudation into the serous cavities. Such transudations might be rapidly converted into purulent fluids owing to the presence of circulating pyogenic organisms. For this reason, prior to the transfusion, bleeding the patient is, perhaps, advisable if his condition permits.

Care should be taken to guard against the formation of small clots during the transfusion in order to prevent the formation of septic emboli.

The cases of chronic suppurative infections of wounds which were treated by this method all made a rapid and satisfactory recovery.

Precise evidence as to the value of the treatment in these conditions is lacking, but the fact remains that the patients were in a stationary and chronic condition before the adoption of the method, and that the wound surfaces appeared to become rapidly more healthy, to heal quickly, and the discharge to diminish after the treatment had been instituted.

The use of the method in civil practice may be rather limited by the difficulty in obtaining suitable donors. It seems worthy of further trial and may prove of value in the treatment of malignant endocarditis, acute and chronic suppurative bone or joint infections, or puerperal septicaemia.

I am indebted to Lieut.-Colonel S. G. Butler, D.S.O., R.A.M.C., for permission to use the notes of these cases, and desire to emphasize my acknowledgements to Major Taylor, R.A.M.C., Officer in Charge Surgical Division, and to the surgeons to whose skill and care the success in the treatment of certain of these cases was largely due.

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THE FUNCTIONAL CONNEXION BETWEEN THE REPRODUCTIVE ORGANS AND OTHER GLANDS OF INTERNAL SECRETION.

BY

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It has been shown previously that there is some definite connexion in white rats between the thymus gland and the gonads, more particularly in the male. In animals where a condition of hyperthymism had been established, there was found to be marked degeneration of gonads in the male, and sterility in the female; or—if the animal were young—delayed sexual development.[1] Further experiments, with *x* rays, failed to show that any very marked influence is exerted by the thymus directly on the gonads, but irradiation of the testes or ovaries determined hypertrophy of the thymus.[2] At the same time changes in the pancreas and suprarenal glands were usually observed, and it was to follow up the connexion between the suprarenal glands, pancreas, thymus, and gonads, that the present series of experiments was begun.

In the series previously reported it was thought that some of the changes observed in the female might have been due to the influence of pregnancy rather than to an indirect action of *x* rays through the ovaries. Consequently material has been collected from a large series of pregnant rats at various stages of pregnancy, and the results, it is hoped, will shortly be published.

At the same time a series of experiments was begun to investigate directly the functional connexion said to exist between the suprarenal cortex and the gonads. Owing to the difficulty of obtaining fresh material for feeding experiments, inoculation with various preparations of suprarenal cortex was tried. Full details of the preparations, method of experiment, and findings will be published later, but it was thought that the following preliminary note might be of interest. White rats only have been used up to the present.

Results.

1. In nearly every case the hair began to come out, although the coat was usually very fine and glossy. In a few cases, however, with young animals, the hair came out so much that the whole coat looked quite ragged.

2. The animals appeared to be perfectly healthy. There have been a very few exceptions, where the inoculations were pushed.

3. *Thymus.*—Macroscopically, no constant variation has yet been found. Microscopically, the whole gland appears unusually vascular, but otherwise normal.

4. *Pancreas.*—Hypertrophy of the islets of Langerhans has been observed, but is inconstant. Since the distribution and size of the islets varies so much in normal animals, further investigation of this point must be carried out before it will be possible to arrive at any conclusion.

5. *Suprarenals.*—The gland does not appear to be altered in size. Histologically the medulla is normal. The cortex, particularly the zona reticularis, is unusually vascular. Large spaces have been seen in the zona glomerulosa between the cells, the spaces containing blood and débris. Signs of disintegration are present in the two outer layers of the cortex.

6. *Testes.*—Very marked degeneration has been obtained. The degree of disintegration appears to depend on the duration of treatment, and the stages so far observed are exactly similar to the degenerative changes previously obtained under the action of *x* rays in graduated doses.

7. *Spleen and Liver.*—Normal.

The material from the female rats has not yet been examined microscopically.

In another series of experiments feeding the animals with desiccated suprarenal cortex brought about some change in the rate of growth.

If the feeding was begun at the age of about 4½ weeks, the rate of increase of weight was less, both in males and females, than in the controls. On the other hand, if the feeding was begun either earlier (at 3 to 3½ weeks) or later (at 5½ weeks), the rate of increase of weight was markedly greater in both males and females than in the controls.

The possibility of breeding from these treated animals and the microscopic examination of the glands is still under investigation.

The expenses of this research are being defrayed by a grant from the Royal Society.

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Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

APPENDICECTOMY.

THE ileo-inguinal incision described by Mr. Whitelocke,[1] like the oblique inguinal incision of McBurney, may prove quite successful in uncomplicated cases of appendicitis, but very few surgeons nowadays would, I am sure, like to pin their faith to a definite diagnosis of an uncomplicated appendicitis. In fact, the mimicry of appendicitis by many different pathological conditions is so great that it is sound surgery to adopt an incision which will enable the surgeon to deal not only with a diseased appendix, but also with any accompanying pathological lesion which may be present.

Mr. Whitelocke seems to emphasize the fact that the ileo-inguinal incision will prevent the occurrence of hernia, but surely the well-tried incision of Battle—where the rectus muscle is left intact—is much to be preferred, seeing that the occurrence of hernia after Battle's incision is relatively very uncommon, even after appendicectomy for suppurative appendicitis. Through the same incision also any complication can be dealt with at the same operation, and thus prevent the surgeon from performing an incomplete operation.

I recently had under my care at the Victoria Hospital, Keighley, three patients who well showed the advantages of Battle's incision. In each case the doctor sent the patient to hospital with a diagnosis of acute suppurative appendicitis, but in the first case there was a well marked gangrenous appendix firmly adherent to an ovarian dermoid cyst with torsion of its pedicle. The second was a gangrenous appendix adherent to a pyosalpinx, and the third a gangrenous appendix adherent to the bladder. In each case I am convinced that the complete surgical treatment required would have been quite unsatisfactorily performed by the ilio-inguinal incision.

Another patient, a young lady aged 22 years, was operated upon by me at a nursing home for what was clinically an ordinary recurrent appendicitis. My diagnosis in this case was confirmed before operation by a very eminent surgeon. At the time of operation the appendix showed the ordinary signs of chronic inflammation with two faecal concretions in its lumen. Having used Battle's incision, I examined the other abdominal organs, and found a shrunken gall bladder full of stones. By extending the original incision upwards I also performed cholecystectomy. In this way the patient was in all probability saved the necessity for a further operation at a later date.

Similar experiences are common to every surgeon, so that, unless we have more certain evidence for the diagnosis of a definite uncomplicated appendicitis, surgeons will, I have no doubt, prefer to use an incision with a much wider application than that afforded by the ilio-inguinal one suggested by Mr. Whitelocke.

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ACUTE OEDEMA OF THE LUNGS.

THE cases described in recent issues under the title "Acute suffocative catarrh," especially those of Dr. Anderson and Dr. Gale, appear to me to be identical with the disease called "acute oedema of the lungs," of which a description is to be found in the latest edition of Osler's *Practice of Medicine*.

Some years ago I had the opportunity of observing the following case: A man, aged 57, previously strong and healthy, was awakened about midnight by a feeling of suffocation. Almost immediately after large quantities of

[1] BRITISH MEDICAL JOURNAL, February 14th, 1920. p. 211.

frothy watery fluid poured from his mouth and nostrils; there was no evidence of blood in the fluid. The complexion was extremely pallid and the skin was cold and clammy; dyspnoea was intense. In spite of all assistance the patient died in about a quarter of an hour.

About four years ago I read for the first time Dr. Langdon Brown's *Physiological Principles in Treatment*. In the notes upon the condition termed "acute oedema of the lungs" I at once recognized the diagnosis of my case.

The condition has been explained upon a theory that the left side of the heart, for some reason or other, fails, whilst the right side continues to work as usual. In this way it is presumed that the lungs become engorged, so that the fluid contents of the blood are forced into the air spaces, thus accounting for the great amount of frothy watery expectoration which is so noticeable a feature in these cases.

I must confess that, to me at any rate, this theory is not satisfactory. In the entire absence of past evidence, why should the heart be constantly the first organ called upon to afford an explanation for so many cases of death which may be difficult otherwise to account for?

In urticaria following food poisoning, and in so-called angioneurotic oedema no person would call immediately upon the heart for an explanation of the oedema. I fail to see why the lungs should not be the site of the oedema in some of the cases. Such an occurrence would account fully for the rapidity of onset and the usual early fatal termination which seems to be so frequent in the cases recorded.

One point which the correspondence on the subject has brought out is, that the disease is probably more common than it is usually thought to be.

The very nature of the cases necessitates their falling into the care of general practitioners much more frequently than hospitals. Upon this point of view, however, Sir James Mackenzie, in his address on "Clinical Research," dwells much more eloquently than I can. "I saw," he states, "that I must look for assistance to those who had undergone experiences similar to my own, and it is for this reason that I seek the help of the general practitioner."

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TREATMENT OF THE RUNNING EAR.

I HAVE just received the JOURNAL of August 23rd, 1919, and read "Efficient treatment of the chronic running ear," by Mr. A. J. Wright, F.R.C.S., of Bristol, and I feel bound to ask certain questions and state my own experiences:

1. When does Mr. Wright consider a discharge from an ear chronic? On reading his letter I am not clear whether he has not mixed up chronic cases with long-lasting acute cases.
2. Does Mr. Wright seriously wish us to believe that syringing ears is modern treatment, and that syringing will "prevent stagnation of discharge in the middle ear"? How does the lotion get into the recesses of the middle ear?
3. Does Mr. Wright deny that the antrum is, in a great number of cases, the cause of the persistence of the discharge? If he do not, how can syringing affect the antrum?

I agree most heartily that greater care should be given to the treatment and the treatment carried out at least twice daily, and that by a specialist who knows every move in the game. I disagree most strongly with the use of hydrogen peroxide and syringing. Both, in my opinion, do harm. If the doctor have patience, he should sit down and carefully sponge out the discharge, using Politzer's bag to expel gently what is in the middle ear, and leave the meatus and membrana dry. Painting with ether—despite its stinging, which I warn my patients about—or alcohol will harden the skin and prevent or cure external otitis, which is so common, and obviate softening and proliferation of the epithelium of the membranes.

What I complain about is that the acute discharges are not attended to properly. I agree with many otologists that if the acute discharges last more than ten days without showing signs of clearing up, or if the temperature remains elevated and accompanied with middle-ear or mastoid pain, the mastoid should be opened up. This has been my practice, and I can truthfully say that the results have been excellent, the perforation closing and excellent hearing resulting.

But I cannot understand the bringing about of cessation of chronic discharges in two to three weeks. I have secured that with prolonged acute discharges. In my opinion chronic discharges are due to three things chiefly: first, to infections of the Eustachian tubes and nasopharynx; secondly, to infection of one or more of the mucous spaces in the attic, with bone trouble among the ossicles; and thirdly, infections of the antrum, including the lining and bone. In the case of Eustachian trouble cure may be looked for, but the nose and throat must receive attention—a point not mentioned in Mr. Wright's letter. In the other two instances I agree with Mr. Adair Dighton that nothing short of a mastoid operation will cure most of these cases, as I believe that the majority have bone infection at bottom.

If Mr. Wright can persuade specialists to give more personal attention to these cases, and not to leave them to house men or inexperienced persons, he will benefit humanity.

I am sorry I cannot agree with his statements. My simple mastoid operations, numbering about 200, show easily 75 per cent. of cessation of discharge and healing of the perforation with excellent hearing.

Christchurch, N.Z. T. A. MACGIBBON, M.D.

Reports of Societies.

ALCOHOL AS A THERAPEUTIC AGENT.

AT a meeting of the Therapeutical Section of the Royal Society of Medicine on February 17th, Dr. H. H. DALE presiding, a discussion took place on the value of alcohol as a therapeutic agent.

Dr. DALE said that many such discussions had been complicated by the intrusion of views on the common use of alcohol. It ought to be possible to hold strong opinions as to the value or the danger of alcohol in daily life without committing oneself to the admission or rejection of it in therapeutics. The known actions of alcohol might be divided into those of a food and those of a drug. Beyond dispute alcohol could be used by the body as a source of energy. There were limitations to the power of the body to use alcohol in this way, but there was no longer any room for doubt that the body could oxidize considerable amounts. As a source of energy alcohol had certain peculiarities. Like dextrose alone among ordinary constituents of diet, it required no digestion; it could be rapidly and completely absorbed, and it was not susceptible to fermentation by yeasts and bacteria. The mere value of alcohol as an emergency food, therefore, should give it a place in rational therapeutics. One very specialized type of treatment in which alcohol was used purely for the supply of energy was during the preliminary period of starvation which introduced the modern treatment of diabetes. As for the use of alcohol in convalescent diet, when they had once dismissed as quite unsupported by evidence the traditional notion crediting alcohol with a specific effect on metabolism or a special body-building power, they were left to individual opinions that would be coloured by the relative importance attached to the immediate comfort of the patient on the one hand, and the danger of habit-formation on the other. It was still a debatable question how alcohol influenced respiration. The good effects might be attributed not to direct action on the respiratory centre, but to such indirect actions as the lessening of an excessive reflex excitability; in so far as alcohol could restore a quiet, deep breathing, it ought to be of value. Among the several conditions which were probably confused under the vague expression "shock" it might be expected that those in which inhibitions were predominant would get some benefit from alcohol; in others, in which a toxaemia causing peripheral stagnation in the blood was the predominant factor, there seemed no likelihood of alcohol doing good. It would not be without value if the Section registered a protest against what he held to be the superstitious view that alcohol was a sort of specific against infection, influenza in particular. There was no evidence for a specific prophylactic action of any kind. Alcohol was a mild sedative and narcotic, and a superficial vaso-dilator. On the lines of these demonstrated actions he believed that such therapeutic value as it possessed could be explained, and its inclusion in the pharmacopoeia could be defended. The value of alcohol in therapeutics had, however, been discounted by its indiscriminate and unreasonable use.

Clinical Experience.

Sir WILLIAM HALE-WHITE said that therapeutically it seemed to him alcohol was of great value as a food, for example, in the anorexia and vomiting met with in phthisis or cancer. It must not be given, of course, in functional anorexia or vomiting, because such patients were just those who would form an alcohol habit; but in an acute fever when anorexia and vomiting or indigestion were present, and therefore limited the food which the patient could take in, alcohol was an admirable food, requiring no digestion. Being easily absorbed it had the inestimable advantage of making the patient feel comfortable and sending him to sleep. The disadvantage was that occasionally headache followed, and in some cases sleep was not obtained. On the whole, however, in acute fevers, where the patient could not take food well, alcohol was beneficial, and had no deleterious effects. In convalescence it often did much good. The patient just recovering from a severe illness or an attack of influenza or diarrhoea often felt better for a glass of wine with his meals. His digestion was left weak, and he described himself as "all on edge," which, translated into physiological language, meant that all sorts of peripheral stimuli were worrying him as they would not were he in health. A glass of wine would lull these peripheral stimuli without doing any appreciable harm; the patient would feel better and more comfortable. Personally he had never known the alcohol habit contracted through taking alcohol during convalescence in the way he had described. Its therapeutic action on the circulation was difficult to estimate, save in the simple case of strongly concentrated alcohol given during fainting, when the alcohol seemed to act reflexly. When he entered the profession large amounts of alcohol were given in pneumonia. To-day most cases received no alcohol, but he was unaware that the outlook in pneumonia was better. He was not convinced, from watching many patients, that it did any grievous harm, but he was convinced that most patients suffering from pneumonia could do very well without it. The effect of alcohol on the respiratory centre did not appear to him to be of very much clinical significance. The chief effect of alcohol therapeutically was as a pleasant depressant, particularly efficacious in inhibiting peripheral impulses, such as a pain here and a discomfort there, and diminishing the trifling worries that bothered the sick. In small doses it was useful for the convalescent; in larger doses it was useful for the patient acutely ill; in larger doses still it had the advantage of making the patient sleep. But in all these discussions they were faced with two difficulties—the one that it by no means followed that the effect of a drug in health was the same as in disease, while its effect in disease was often very difficult to estimate; the other, that no person, whether acutely ill or convalescent, was ever given pure alcohol and water. Perhaps the other bodies present in wines and spirits had their actions; certainly there was a widespread belief that brandy was the best form of alcohol in diarrhoea, just as the glass of wine was acceptable to those with tired digestions, and there was a firm belief among the laity, and among some doctors, that old brandy was more efficacious than new.

Alcohol a Food?

Dr. E. MELLANBY, after relating some observations on dogs, said it was proved that alcohol could supply up to 40 per cent. of the total energy of the human body lost in the course of the day; but it differed from other foodstuffs in that its rate of combustion was independent of the amount of alcohol in the body (in order to get the maximum food value out of alcohol it was only necessary to give small quantities). It had no specific dynamic action, no stimulating effect on metabolism, it did not increase the amount of energy available at any particular moment (if only alcohol were given to a starving man there would be no increased production of heat in his body); its rate of oxidation was independent of all other metabolizing processes; and, finally, if it was desired to use alcohol as a source of muscular energy, this could only be done with relatively small amounts. He did not think it was clear that any substance which was only a source of energy was of any value at all to the body, and he doubted whether it could justifiably be called a foodstuff.

Dr. R. HUTCHISON claimed that therapeutically alcohol should be considered as a food; if it was a sparer of protein and fat, that was just the kind of action which was wanted in acute fevers. It was agreed that alcohol was a digestive stimulant; many people took food better with a certain amount of alcohol than without. With a tired stomach a glass of wine was a direct aid to digestion, and this was valuable in convalescence. Alcohol was also of clinical use in dilating the superficial blood vessels. With people who had been exposed to cold and ran the risk of congestion of their internal organs, alcohol undoubtedly did good, and the same was true in rigor and during an acute attack of angina pectoris. The main difference of opinion would come in with the question whether alcohol could be regarded clinically as a heart stimulant in acute illness. If alcohol had no direct stimulating effect, might not the heart benefit from the indirect effect upon the patient as a whole, whereby mental calm and sleep were promoted?

Dr. W. H. WILLCOX dealt simply with the use of alcohol as a therapeutic remedy in the form of vapour when combined with oxygen. He was convinced that the value of this combination was considerable in cases where there was cardiac failure. The desirable percentage of alcohol in vapour was from 3 to 5. The use of brandy or whisky was of little value because it gave such low percentages. He did not suggest that this mixture of alcohol vapour and oxygen had any physiological action on the normal person, but there was no question of its markedly beneficial effect in profound cardiac failure associated with various severe diseases.

Dr. LANGDON BROWN said that the four definite points on which alcohol might be regarded as having real therapeutic action were (1) in the fasting treatment of diabetes; (2) in convalescence, in promoting a flow of gastric juice; (3) in the occasional removal of temporary inhibitions of a troublesome kind; (4) in pneumonia, in which alcohol was combined in administration with oxygen.

Dr. ESTHER HARDING said that in the treatment of children alcohol was useful in certain definite respects. Small doses were useful in bronchopneumonia in infants and young children. In the form of brandy alcohol was an efficient sedative drug in the case of young children. Alcohol was also of use in some cases of marasmus, when a child could not take milk; its digestion could be started and got back through whey and other foods to milk again. Great care, of course, had to be exercised because of the effect of alcohol on the liver in small children.

Dr. O. LEYTON described a case of diabetes mellitus in which he gave alcohol with useful results during the period of alimentary rest. Professor W. E. DIXON, in a brief comment on the discussion, said that two points of disagreement had made an impression on him—the one, as to the possible stimulating action of alcohol on the heart; the other, as to the definition of a food. He thought it was quibbling with the question to say, as Dr. Mellanby had said, that alcohol was not a food, though it could be a sparer of other foods. Dr. C. F. HARFORD thought that the discussion had shown that the profession was only on the threshold in its study of the subject. He laid stress upon the fact which had been brought out that alcohol was naturally a narcotic and not a stimulant.

Dr. DALE, in closing, confessed himself still unconverted as to the directly stimulating action of alcohol on the heart. With regard to Dr. Harford's emphasis on the newly elucidated fact that alcohol was purely a narcotic, he reminded him that from the point of view of therapeutics—he was not talking of common life—there was no inherent desirability in a stimulant action and no inherent drawback in a narcotic action.

ANAESTHESIA IN THROAT OPERATIONS.

A MEETING of the Section of Anaesthetics of the Royal Society of Medicine was held on February 6th, with Dr. LLEWELYN POWELL, the President, in the chair.

Mr. A. L. FLEMMING showed a regulating dropper for the supply of ether, consisting of a container, a side dripper, a small tap to control dropping, and a nozzle; the whole could be connected with a stand attached to the anaesthetic or operating table.

Dr. FELIX ROOD read a paper on "Anaesthesia in throat and nose operations," in which he argued that ether was the proper anaesthetic. It could be used to produce a light or a very deep anaesthesia; the latter being the form to be employed for the modern operation for removal of tonsils and adenoids. He described a modified "open

ether" technique for securing the requisite depth of narcosis, in which with a fresh colour there were dilated pupils, quiet automatic breathing, and widely abducted vocal cords. The correct position of the patient was a necessary adjunct of this deep anaesthesia; the head should be extended over a firm pillow so as to rest on the vertex. The surgeon should have all the leisure and facility ordinarily supplied to him in such operations as that for cure of cleft palate.

Mr. HERBERT TILLEY said that primarily the safety of the patient, and secondly the convenience of the surgeon, must be considered. Ether was indisputably safer than chloroform or any mixture containing it. He had seen eleven deaths with chloroform, and one could never tell when one of these tragedies might occur. Ether caused a little more oozing of blood at the time of operation, but this was preferable to the greater risk of haemorrhage after chloroform. In five years he had only had to return to two patients on account of bleeding. To prevent blood entering the air passages the position described in the paper was essential.

Dr. WILLIAM HILL criticized the length of time necessary for induction by Dr. Rood's method; it would render out-patient operating impossible on its present scale. Rapid operations could be done very satisfactorily under ethyl chloride.

Dr. G. H. A. BARTON warmly supported the method, but preferred to start induction with small doses of ethyl chloride. For intralaryngeal operations he approved of rectal anaesthesia.

Sir STCLAIR THOMSON said that operations on the nose, where the blood could be cut off from the air passages by post-nasal sponges, differed little from any other surgical operation. Similarly, when laryngotomy or laryngo-fissure was done, and packing put on top of the tracheotomy tube, the anaesthesia was one of the smoothest and least risky possible. Anxiety came with operations on the pharynx. He had been associated with three fatalities, all in private practice; in no case was death due to blood entering the larynx, nor to traction, nor could he say the patient was too profoundly under; in all three cases an independent pathologist found status lymphaticus after death. In America, where ether was so universally used, one of the most skilful operators on the tonsils had gone back to chloroform. Chevalier Jackson carried out his endoscopic operations without any anaesthetic either general or local.

Dr. F. W. SILK was convinced of the truth of Dr. Rood's advocacy of ether. He held that the upright sitting position was good for many cases. Ethyl chloride was to be objected to only if given from a bag. He advocated the addition of a minute quantity of chloroform to ether, and urged the advantage that often arose from using Kuhn's intubation tube.

Mr. W. STUART-LOW believed in the importance of atropine beforehand, of warmth and quiet in the room, and of an early morning hour for operating. He upheld the merits of chloroform.

Dr. P. WATSON-WILLIAMS referred to blocking the nerves by injection of branches of the fifth nerve, and to injection of adrenalin. He felt strongly that ether was the best anaesthetic for operation on the respiratory tract.

Sir WILLIAM MILLIGAN said that no operation, however slight, should be regarded as trivial; it never was so from the patient's point of view. He had a leaning towards chloroform, but thought that ether and chloroform were used about equally often by the anaesthetists with whom he worked. He used Kuhn's tube on all possible occasions; it enabled one to obviate all risk of blood entering the air passages. A considerable amount of gauze must be packed into the pharynx; when this was taken out there was always a clot of blood, which must be removed lest it be sucked in. Adrenalin was extremely dangerous if injected during anaesthesia; placed on the mucous membrane it was innocuous. Before ether he insisted on preliminary injection of morphine and atropine.

Mr. H. E. G. BOYLE described a combination of anaesthetics which he had used for the last two years in nose and throat operations. A hypodermic was given beforehand and anaesthesia induced with gas and oxygen, and maintained by gas and oxygen in conjunction with ether or C.E. mixture or chloroform, according to the case. He used chloroform whenever the diathermic cautery was to be employed. Anaesthesia was maintained by endobuccal or endopharyngeal methods. The anaesthesia was light and the patient was kept pink all the time.

Mr. HAROLD BARWELL considered that ether given by modern methods and preceded by atropine was on the whole the best anaesthetic in nose and throat cases. For such operations as resection of the septum the intra-tracheal method was inconvenient; the post-nasal plug was embarrassing and unnecessary if proper ischaemia were secured. He used cocaine a quarter of an hour before operation and injected adrenalin (1 to 15,000) beneath the mucous membrane before anaesthesia was started. This was perfectly safe; it was injection during anaesthesia that had been shown to be dangerous. He did not agree that the position demonstrated was the only proper one for dissection of tonsils. Hyperextension of the head caused discomfort and congestion and made the removal of adenoids difficult. The side position was perfectly safe and more comfortable for the patient if slightly less so for the surgeon.

Dr. BROWN KELLY recommended ethyl bromide for operations on children requiring only brief anaesthesia. He had used this drug for twenty-five years in large numbers of cases. A child of 6 required about one drachm and a child of 12 about two. Induction took about a minute and recovery was extremely rapid.

Dr. Z. MENNELL preferred to start with gas and oxygen, continuing with ether. He considered the position with head over-extended essential. Wide abduction of the cords took place only in very deep anaesthesia, and the pink colour came only when pupils were widely dilated and inactive to light. He knew of two deaths this year under ethyl chloride in one hospital. In operating theatres of the Royal Infirmary, Edinburgh, a notice was put up forbidding the use of chloroform without special permission.

Dr. CECIL HUGHES said that when anaesthesia had been induced with ether, or gas and ether, a moderate anaesthesia could be safely maintained with chloroform.

PUERPERAL SEPSIS.

AT a meeting of the Edinburgh Obstetrical Society, held on February 11th, with Dr. WILLIAM FORDYCE, president, in the chair, Dr. BERRY HART read a paper on suggestions as to the causes of the persistence of puerperal septicaemia since the end of the pre-antiseptic period. The question of antisepsis and asepsis was considered. These only give a relative not an absolute asepsis. In this connexion the importance of using gloves, a sterilized gown, aseptic sheets, instruments, and the minimization of internal examination were all emphasized. In connexion with the mechanism of labour it was important to remember that the study of casts and frozen sections showed that Naegele's flexion did not occur during labour. "Our management must be altered accordingly. Deflection begins even in the first stage (Braune, Chiari, and many others). It is marked at crowning." Dr. Berry Hart claimed that the placenta was always normally separated during the intervals between the pains. For this reason the Credé method should be abandoned as a means of separating the placenta. It was pointed out that this method was associated with great danger when applied early in the third stage. It tended to cause retention of membranes and subsequent infection. The statement that retention of pieces of membranes did no harm, that antiseptic management would prevent mischief, was dangerously fallacious. For these reasons a return to the old waiting policy must be made. A maximum of three-quarters of an hour to an hour must be given for the third stage of labour.

In the subsequent discussion Drs. BARBOUR, LOWRY (Belfast), RITCHIE, HAIG FERGUSON, LACKIE, PATERSON, ROBERTSON, NICHOLSON, JOHNSTONE, YOUNG, DAVIDSON, and ARMOUR spoke. It was held by some speakers that the indiscriminate use of gloves by those who had not a special training in aseptic methods might be fraught with great dangers. Dr. Berry Hart's explanation of the separation of the placenta was criticized by some speakers, and it was pointed out that the placenta might be separated in the course of one pain, for example, after pituitary extract.

THE congress of French-speaking members of the medical profession which was to have been held in Brussels on September 30th, 1914, will take place in that city at Whitsuntide.

Reviews.

PSYCHIATRY AND PSYCHO-ANALYSIS.

THE third edition of Dr. STODDART'S manual of *Mind and its Disorders*[1] will disappoint many who would have been prepared to welcome a revision and possible amplification of what was an excellent textbook, written by an author of great experience as a psychiatrist and at the same time a sound neurologist. It would seem, however, that since the appearance of the last edition Dr. Stoddart has become a convert to the sexual theory of Freud and that he finds it to be of general application in the study of neuroses and psycho-neuroses.

This is no place to discuss the validity of the Freudian view, but it is not without interest to note its effects on the mind of an acute and scientifically trained observer. It would be a thankless task to set out at length the opinions to which the whole-hearted adoption of Freud's doctrines may lead; they have been made sufficiently familiar by the utterances of the Freudian extremists. In the book before us we read that "ten per cent. of females" are "homosexual" (p. 187); that "psychoanalysis reveals that neurasthenia is always due to partially or completely repressed auto-eroticism" (p. 212); that "anxiety neurosis is begotten of sexual excitations which are unable or not allowed to follow their natural course" (p. 219); that "the most superficial analysis of such patients [cases of anxiety neurosis] reveals the phallic significance or symbolism (in their minds) of Zeppelins, aeroplanes, and bombs" (p. 220); that, in children, "psychoanalysis reveals this instinct to retain the faeces to be the first attempt at economy, for such persons invariably grow up thrifty and methodical, and it is remarkable how frequently it is found during a psychoanalysis that faeces symbolizes money" (p. 74). The views expressed may or may not be the logical outcome of the Freudian theory, but they will seem to many to verge on the ludicrous. However this may be, we had supposed that experience gained during the war had proved beyond peradventure that Freud and his disciples had made a rather serious mistake in asserting that the sexual content is always discovered. We believe we are right in saying that in some of his writings before the war Freud himself admitted that the content was not always sexual, but any admission of this nature seems to have produced very little effect on many of his disciples, who appear to have treated it as qualifying the theory to so small an extent that it might be ignored.

The key to the problem lies in the recognition of the essentially mechanical basis of the Freudian hypothesis. The attempt to translate the mind in terms of mechanical causation has resulted in a *reductio ad absurdum*. It is a true product of German scientific materialism. The French as it is the British understanding of the issues of the great war has been summed up by Bergson as a struggle of spirit against matter, but the incubus of mechanism still weighs heavily on psychology as studied by the psychiatrist. The brilliant work of our great English psychologist, James Ward, seems to be unknown to the average writer on psychotherapy, for otherwise the dull monstrosities conjured up by Teutonic mechanism would hardly obtain the credit they do. So long as it is recognized that psycho-analysis like any other scientific method is purely an intellectual shorthand for expressing certain aspects of phenomena in terms of mechanical causation no one would care to dispute its value to psychology; it is when we forget this truism and mistake the mechanical aspect for the whole that we are landed in a morass of paradoxes. Freudians have, in defending their theories, sometimes accused those who disagree with them of being inspired by repressed sexual complexes, and it may clear the atmosphere if the writer of this review admits that there is no argument without emotional tone, and that in his case the complex is a belief in the ultimate rationality of humanity.

It seems a rather serious omission from a textbook written for senior students and junior practitioners, in which psycho-analysis is recommended as a standard method of treatment, that mention is not made of the pitfalls that surround the analyst. Given a suggestible subject and an inexperienced investigator, it is probably an even chance whether the data of the psycho-analysis may not be furnished by the examiner himself. It is not, however, with the ultimate truth of the Freudian theory that we are at present concerned, but with the fashion in which the medical public is advised to use a two-edged weapon such as sexual psycho-analysis. There is a risk of unmerited public discredit falling on psychotherapy generally. It is time to say plainly that where neurologists gather together tales are heard of young minds soiled and perverted by the reckless use of gross sexual suggestions by inexperienced or ill-balanced followers of Freud. It is no answer to say that in the hands of men of the character and attainments of Dr. Stoddart no harm can come. There are many men mindful of their patients' welfare who yet cannot safely be exposed to the strain involved in the elucidation of sexual complexes. Dr. Stoddart would be ready to admit the incalculable influence that preoccupation with the sexual instinct may exercise on otherwise well-balanced minds. We must regard the present position in respect to the Freudian doctrines as most unsatisfactory and even dangerous. It is unsatisfactory because the lack of discrimination with which a considerable number of physicians have adopted the most extreme views of Freud as to the sexual content must tend to divert the attention of others from the merits of psycho-analysis, whatever those merits may be; and it is dangerous because in injudicious hands treatment founded on the theory of the sexual origin of all neuroses may lead to much mischief.

In the meantime we can only counsel the younger members of our profession who may read Dr. Stoddart's book, and quite properly wish to study the analytic method in psycho-pathology, to remember that the Freudian view is by no means generally accepted, and that by acting upon it they may accept a responsibility which they might be better advised not to incur.

[1] *Mind and its Disorders.* A Textbook for Students and Practitioners of Medicine. By W. H. B. Stoddart, M.D., F.R.C.P. Third edition. London: H. K. Lewis. 1919. (Demy 8vo, pp. xx + 580; 81 figures, including 9 plates. 18s. net.)

THE TRANSMUTATION OF BACTERIA.

THE phenomena of bacterial variation offer a field of study of constantly increasing interest, and present problems of the greatest practical importance.

In his recently published monograph on *The Transmutation of Bacteria*[2] Dr. S. GURNEY-DIXON discusses systematically the evidences of bacterial variation which he has collected from the literature in relation to their bearing on the possibility of transmutation of species among bacteria. He also records some experiments of his own tending to illustrate the difficulties met with in interpreting the results of animal experimentation, bearing on the supposed occurrence of transmutation in the living body. It may be said at once that his book is a valuable contribution to the study of the meaning of variation in bacteria and the importance to be attached to it. It is remarkable as much for lucidity of expression and arrangement, and for acumen of criticism, as for the moderation of the general conclusions. A large amount of very useful information has been brought together and summarized in its pages, which cannot fail to be of great assistance to other workers.

Dr. Gurney-Dixon originally undertook his investigation in the hope of finding an answer to the question whether actual transmutation—meaning by that term the changing of members of one recognized species into those of another—may not occur among bacteria. In prosecuting this inquiry an endeavour was first made to collect the published records of experiments in which transmutation was alleged to have occurred. They proved to be few in number. In the second place, a series of experiments was carried out with the object of disproving the contention put forward in one of these cases. Thirdly, with a view to criticizing the claim made in the remaining cases, and in the hope that it might throw some light on the problem of transmutation as a whole, a general study of the subject of variation amongst bacteria was undertaken.

In the book itself the author presents his material in the reverse of the order just named, beginning, as was most natural and logical, with an account of the conditions which have been found to modify the characters of

[2] *The Transmutation of Bacteria.* By S. Gurney-Dixon, M.A., M.D. Cantab. Cambridge: University Press. 1919. (Demy 8vo, pp. xviii + 180. 10s. net.)

bacteria, followed by a discussion of the numerous instances of variation in morphology, chemical activity, virulence and pathogenicity which have been recorded by observers. Then he proceeds to the critical examination of supposed instances of transmutation, and the detailed consideration of the possibilities regarding its occurrence in the living body. The concluding chapters are devoted to a general review of the whole subject, to a discussion of the enzyme theory of disease and its bearing on the problem of transmutation, and to a statement of the author's own conclusions.

The chapter on the enzyme theory of disease is largely speculative, and forms much the weakest and least satisfying part of Dr. Gurney-Dixon's essay. In it he puts forward a remarkable hypothesis. Starting from a consideration of the diversity of "symptoms" which one and the same micro-organism may produce in different individuals, or in different epidemics, he suggests that each separate symptom of disease may be attributable to a separate and distinct bacterial enzyme. He discusses the question whether these enzymes may not be dissociable from the specific organism of the disease, and if completely dissociable, whether they may not be able to produce the disease—symptoms and lesion—in the entire absence of the specific organism. He believes that the considerations he puts forward "lend some measure, if not of certainty at least of probability, to the supposition that the organisms associated with certain diseases are not themselves the causal agents of these diseases, but merely act as carriers of ultra-microscopic bodies, possibly parasitic in character, which have hitherto eluded detection, but which are the real causal agents of the lesions and symptoms produced." It will follow from this that "obviously if it is possible for the enzyme or enzymes which produce a certain disease to become dissociated from the organism to which that disease is commonly attributed, and to become attached to some other organism, the effect, though not the actual process of transmutation, would be brought about." Dr. Gurney-Dixon adds, "A transference of this kind would present certain difficulties"; and we may add that it is difficult to see what is gained by propounding purely speculatively the hypothesis that bacterial enzymes are ultra-microscopic parasites of the bacteria—smaller microbes within the microbes we already know. It may be that:

> The bigger fleas have little fleas
> Upon their backs to bite 'em,
> The little fleas have lesser fleas,
> And so *ad infinitum*.

But however much that idea might commend itself to our ultimate sense of justice in relation to those ravenous insects, we do not put it forward as a scientific proposition in the absence of the necessary evidence.

In his discussion of supposed instances of transmutation the author is on surer ground. In particular his analysis and criticism of certain experiments of Horrocks, which were put forward as evidence of the transmutation of *B. typhosus* at one time into an organism intermediate between *B. typhosus* and *B. coli*, and at other times into *B. faecalis alkaligenes* or a Gram-positive coccus, is clear, concise, and destructive. It is shown that in the experiments on animals the only evidence of transmutation afforded was that on some occasions, after the intraperitoneal injection of living *B. typhosus*, a different organism was subsequently recovered from the infected peritoneal cavity. Dr. Gurney-Dixon characterizes Horrocks's statements as startling, and the criticism is fully justified.

But the main part (nearly two-thirds) of the book is occupied with the author's study of the conditions, instances, and principles of bacterial variation, and these chapters constitute, as already stated, the most generally useful portion of the work. They form a valuable and often suggestive contribution to the study of general bacteriology, which we can confidently commend to the attention of other workers in the same field of study.

PHYSIOLOGICAL EFFECTS OF HIGH ALTITUDES.

Altitude and Health[3] is the title of an interesting work by M. F. F. ROGET of Geneva, founded on the Chadwick lectures he gave in 1914. Sir William Collins, in a prefatory note, cites the opinion of Farr, who was a contemporary of Chadwick, and established the correlation between crowding and high mortality, to the effect that "the vigour of their own lives is the best security men have against the invasion of their organization by low corpuscular forms of life; quarantine, vaccination, and other preventives are subordinate as means of subduing mortality."

M. Roget has much of interest to say on the immunity of natives of high tablelands from consumption and lung diseases and on the climate of the Alps and its stimulating effect. In winter there are occasional snowstorms, lasting, perhaps, two or three days, but usually followed by calm sunny weather day after day for weeks at a time. In the upper Alps in winter pure cold dry air surrounds the body; sunlight warms the body by day, and at night the air is dry and cold; usually the air is calm, and wind can be avoided in sheltered sunny nooks. The snow on the ground reflects and intensifies the sunlight and catches dust. The air is so dry and germ-free that meat can be dried in strips in the sun, and joints of meat will not go bad if kept out of the sun. The peasants show cheeses 100 years old. There are no flies or mosquitos. The cold dry air and the sun dry up catarrhs, sores, moist eczema, etc.; the skin thickens and hardens and the hair grows in exposed parts. The evaporative and cooling power of the air has a most beneficial effect on the respiratory passages, promoting the flow of blood and secretion, as has been pointed out by Leonard Hill.

The value of M. Roget's book depends on the account he gives of the climate and health of high Alpine villages and at the St. Bernard's Hospice. He is, however, not sufficiently acquainted with recent physiological research. For example, he writes: "Press the blood out of your ear, the rays (of the sun) will all pass through it—the ultra-violet rays are retained by the blood." The experimental evidence adduced by J. E. Barnard and others shows, however, that the ultra-violet rays do not penetrate the outer surface of the skin. In speaking of sunburn M. Roget says: "The composition of pigment has not been accurately gauged so far. Is it a carbon deposit in the cells ensuing upon oxidation of the blood?" It is known that the pigment is melanin, probably derived from tyrosin and so of protein origin. The carbon idea has long been exploded.

M. Roget mentions Barcroft's work on respiration and the blood at high altitudes, and draws attention to the evidence of "acidosis" in connexion with mountain sickness. "Acidosis" of the blood is now recognized to be a diminution of its sodium bicarbonate content produced by increased pulmonary ventilation and consequent "washing out" of CO_2. The resulting sodium carbonate is removed from the blood by the tissues. CO_2 is washed out in order to get in more oxygen by raising the alveolar partial pressure of oxygen. The result is increased alkalosis, not acidosis of the body, as has been pointed out by B. Moore and Haldane. A moderate altitude regenerates the blood, like the old-fashioned habit of blood-letting, by stimulating the formation of new blood cells.

EPIDEMIC DISEASES IN MAURITIUS.

The Epidemics of Mauritius,[4] by Dr. D. E. ANDERSON, will be found interesting. Islands are specially suitable sites for studying epidemics, and Mauritius is no exception to the rule, the introduction of surra and malaria into it forming one of the most interesting epidemiological studies in tropical medicine. In the preface the author states that he has purposely written in a popular style in order that the book may be interesting to readers who do not belong to the medical profession. It is as well, however, to be accurate even when addressing the laity. We cannot accept as accurate, statements such as "the seven days Phlebotomic Mediterranean fever resembling dengue" (p. 217), and "the consensus of opinion as to the carrier or transmitter" (of dengue) "is that it is a *Phlebotomus*, probably the *Papatasii*," which is also believed to carry the micro-organism of the so-called "seven days Mediterranean fever," and possibly of the *Micrococcus melitensis* (p. 221). Phlebotomus fever is "three-day" fever, not

[3] *Altitude and Health.* By F. F. Roget. London: Constable and Co., Ltd. 1919. (Demy 8vo, pp. xii + 186. 12s. net.)

[4] *The Epidemics of Mauritius.* With a descriptive and historical account of the island. By Daniel E. Anderson, M.D., B.A., B.Sc., F.R.S.E., F.R.C.S. London: H. K. Lewis and Co., Ltd. 1918. (Demy 8vo, pp. xvi + 312; maps and other illustrations. 16s. net.)

seven-day fever, and we know of no evidence that the *P. papatasii*, the carrier of three-day fever, also carries dengue or undulant fever. The recent work by Clelland and his fellow workers in Australia clearly shows that *S. fasciata* is the carrier of dengue. Throughout the book specific names are rendered with capitals: *Plasmodium Malariae* (p. 185), *Myzorhynchus Mauritianus* (p. 191), *Micrococcus Melitensis* (p. 221), etc. All these second or species names should be written in small letters. Apart from some minor defects, such as those pointed out, the book contains a mass of interesting detail both as regards epidemics and other points. In an appendix will be found the fauna, flora, and conchology of the island, and a bibliography; not only so, but a photograph of the author adorns the frontispiece of the work.

NOTES ON BOOKS.

IN an appendix to *Nursery Schools*[5] the Board of Education's Regulations of 1918, including the important prefatory Memorandum, are reprinted. The bulk of the volume consists of seven papers (based on articles appearing originally in *Maternity and Child Welfare*) in which various writers discuss the ways in which the provisions of the Act may be made to bridge the gap which exists in child welfare work between the age of 1 or 2—when infant consultation centres cease to help—and that of 5. This gap, its dangers and their remedy, are allegorically depicted by the late Mr. Byam Shaw in an interesting frontispiece. Turning to the text, we find Miss Margaret Macmillan dealing inspiringly with principles and ideals and courageously with the question of finance. Miss C. E. Grant points out very clearly the evil features of the present infant school system; Dr. W. J. Howarth and Miss Grace Owen, B.Sc., contribute practical suggestions from the medical and educational points of view respectively, and the crucial difficulty—the training of the nursery school teacher—is fully discussed in a chapter by Miss Freda Hawtrey.

Rear Admiral STITT'S little book on the *Diagnostics and Treatment of Tropical Diseases*[6] has now reached a third edition. As when the second edition was published, less than a year ago, a very thorough revision was made, no material changes have been made in the third. The subject of trench fever has been rewritten, a number of changes have been made in paragraphs of various sections, and two new illustrations and a plate of the malarial parasites have been added. There are some new observations that have appeared, however, between the two editions, and as these are important it would have been better had they been incorporated. For example, in the account of schistosomiasis (page 422), no mention is made of the febrile invasion that has been recently noted in infections by *S. haematobium* and *S. mansoni*. Again, in the remarks on ova in faeces (page 503), it is stated: "It is in the faeces we examine either for the parasites or for their ova in connexion with practically all the flukes except the lung fluke and the bladder fluke"; but the latter are often found in the faeces, and the former are sometimes met with there also. There are some other similar statements throughout the book which require emending. New discoveries and new work on tropical medicine succeed each other with such rapidity at the present day that we can sympathize with any author for not getting them all collated for his new edition. The book is a very useful one and deservedly popular.

The latest addition to the Notable Trials Series is the *Trial of Hawley Harvey Crippen*,[7] edited, with notes and an introduction, by Mr. FILSON YOUNG, who has previously shown his aptitude for this kind of task. It may be said that he has done the work well, though we wonder why he should take so much trouble to show that there is a spiritual side to the Crippen affair "which is good and heroic"; nor can we quite agree as to the "extraordinary human and dramatic interest with which the story is packed." Why Crippen murdered his wife, why he left any of the remains under the cellar floor, and why when he had thrown the police off the scent he suddenly lost his nerve and bolted, will never be known for certain. To the medical reader, however, the main interest in this sordid story lies in the medical and scientific evidence, and Mr. Filson Young does not exaggerate when he speaks of the brilliant and laborious analysis which proved that those few pieces of flesh and skin had been part of a body which had contained a fatal dose of hyoscine. As for the suggestion that has been so often made, that Crippen was a qualified medical practitioner in the English sense of that phrase, it may be well to quote from the paragraph in *Truth Cautionary List for 1911*: "He had been engaged at one quack establishment or another for many years, having first come under the notice of the editor of *Truth* in connexion with the Drouet Institute. At the time of his flight from justice Crippen was in the employment of one of the largest quack advertisers in the kingdom, a man named Marr, who has carried on business under the aliases of Keith Harvey, Erasmus Colman, Ohrsorb, and the Aural Remedies Co., for the purpose of victimizing the deaf." There is no doubt that for twenty-seven years Crippen picked up a living by the practice of various low forms of nostrum-mongery.

[5] *Nursery Schools: a Practical Handbook.* London: John Bale, Sons, and Danielsson. 1920. (Demy 8vo, pp. 106. 5s. net.)

[6] *The Diagnostics and Treatment of Tropical Diseases.* By E. R. Stitt, M.D., LL.D., Rear Admiral, Medical Corps, U.S. Navy, etc. Third edition revised. London: H. K. Lewis and Co., Ltd. 1919. (Post 8vo, pp. xvi+534; 119 figures, 1 plate. 14s. net.)

[7] *The Trial of Hawley Harvey Crippen.* Edited, with Notes and Introduction, by Filson Young. Notable Trial Series. Edinburgh and London: W. Hodge and Co., Limited. 1920. (Demy 8vo, pp. xxxv + 211: 7 illustrations. 10s. 6d. net.)

MATERNITY HOMES AND HOSPITALS.

THE publication by the Ministry of Health of a *Memorandum on Maternity Hospitals and Homes*[1] is timely, for in many districts there is a movement to establish such institutions, and hitherto there has been no publication to which the promoters could be referred. The Memorandum is illustrated by plans for buildings of various sizes, to provide from 8 to 120 beds.

Maternity Homes.

The limit for a maternity home is put at from six to twenty beds; maternity hospitals having from twenty-five to fifty beds, or a greater number, will be required in the large towns. Maternity homes will be chiefly required in the smaller towns and rural districts. Their size must be determined by a consideration of the needs of the district. Homes will be needed also in outlying districts of large towns to supplement the maternity hospital. The opinion is expressed that while an ordinary domestic building may, without great difficulty, be converted into a maternity home for six or eight patients with a fairly satisfactory result, when the requirements are greater considerable difficulties will arise, among them the provision of adequate sanitary accommodation and facilities for isolation and separation. Such homes may have an out-patient department to serve as a maternity centre for the neighbourhood, and also as a centre for district nursing, district midwifery, and for the training of pupils and students.

Maternity Hospitals.

A maternity hospital, it is said, should in the same way become the centre of the midwifery service of the town and be made available for training. Such hospitals should be fully equipped for the treatment of all complications and disorders of pregnancy and labour, and for clinical teaching. Their primary purpose should be to provide for abnormal or difficult cases, but not to the exclusion of straightforward confinements. Each should have an out-patient department for the treatment of patients referred by doctors or midwives, or sent from antenatal clinics.

Medical Staff.

The medical staff of a maternity hospital used as a training hospital for students must be competent to teach as well as to conduct the ordinary medical duties of the institution. Such a hospital of twenty-five or thirty beds, or over, especially when admitting mainly abnormal cases, should have one or more resident medical officers, as well as a visiting medical staff, on which pediatrics as well as obstetrics should be represented. A maternity home will not as a rule require a resident medical officer, but two or more medical practitioners having special experience of midwifery should be available when required. Normal cases should be treated by the nurse midwives on the staff unless the patient desires to be treated by her own doctor. It is suggested that one woman doctor should be associated with a maternity hospital or home whenever possible, and

[1] H.M. Stationery Office. Through any bookseller, price 9d. net.

also that a medical officer attached to a maternity home or hospital should have held a resident post in an obstetric hospital.

Nursing Staff.

It is recognized that adequate trained supervision is essential, and it is laid down that the matron should be a trained nurse and an experienced midwife, and that the sisters should also have had training in general nursing as well as midwifery. The number of nurses will depend on whether pupil midwives are taken, but as a general estimate it is said that the minimum staff should be such as will provide on the average one nurse for every three mothers and their babies by day, and for every eight to ten mothers and their babies by night. Small homes as well as maternity hospitals must be provided with a labour ward or wards, for which a special nursing staff will be needed. It is urged that all maternity institutions should have a detached isolation block, or at least an isolation or separation room. The practice of treating cases of puerperal fever in ordinary isolation hospitals is deprecated; such cases should remain under the supervision of the maternity hospital, for skilled obstetrical treatment is needed, and the midwives should observe the course and conduct of the septic as well as of the normal cases. It is recognized, however, that a special nursing staff, as well as separate accommodation, will be required, and the smaller maternity homes, therefore, are not encouraged to retain such cases. While all institutions should be prepared to admit normal cases a maternity hospital should be fully equipped from the point of view of nursing and treatment to deal with all types.

Site.

It is recommended that a maternity home should be on a secluded site, with a garden, but yet reasonably central and easily accessible. In towns the site should be fairly central, but with quiet and clean surroundings, away from a road with heavy traffic. The area of a site for a hospital of twenty to thirty beds should be not less than two acres; for a home or hospital of twelve to eighteen beds not less than an acre and a half.

Buildings.

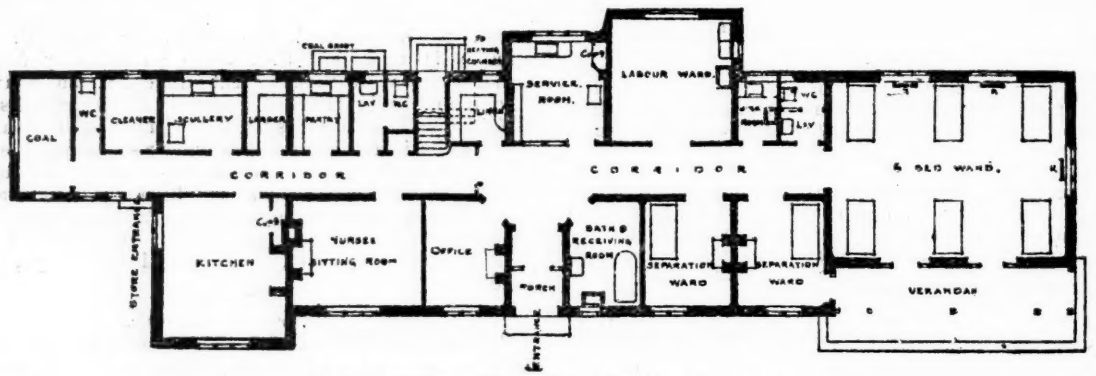
A plan, with elevation, is given for a self-contained maternity hospital for eight beds, and we reproduce the elevation and the ground floor plan. The building consists of a two-story building with two wings; in the wing on the one side is a ward for six beds opening on to a verandah, in the other wing a kitchen and domestic offices are provided. On the ground floor of the central building is a labour ward and two separation wards, as well as a nurses' sitting-room and office. The first floor provides bedrooms for matron and nurses. A plan is given also for a maternity home to provide twenty-two beds comprised in a single building. It contains on the ground floor ordinary offices, kitchen, a nurses' dining room, a nursery, a ward with four beds, two wards with two beds, two wards with one bed each, a labour room, and a receiving room. On the first floor there is a ward with four beds, three with two beds, and two with one bed each; a labour room is shown on the one side of the building, and on the other rooms for matron, sister, and maids; on the second floor is a series of bedrooms for nurses.

An elevation and plan for a one-story double pavilion with thirty beds to form part of a maternity hospital shows two labour wards, a ward with eight beds, another with six, two with four beds, two with two beds, a separation ward with two beds, as well as a receiving room and service room. This is apparently intended to form part of a larger hospital, for which a sketch plan is provided, showing four pavilions, providing altogether 120 beds, with vacant space for the erection of one other pavilion, which would raise the total to 150 beds. It is recommended that the nurses' quarters should form a separate unit, and that a separate isolation block should also be provided for a large hospital. Sketch plans are given for both of these buildings, and also for a combined children's hostel and maternity and child welfare centre in one building. The hostel part would provide a night nursery and a day nursery, opening on to a verandah; the maternity and child welfare part, a waiting room, doctors' room, and also a room for dental treatment.

The area of wards to contain patients with their infants should, assuming ventilation to be adequate, be calculated on the basis of 96 square ft. per bed, with a height of 10 ft., giving 960 cubic ft. per bed. In the case of lying-in wards to contain only mothers at night, the area per bed may, it is thought, be reduced to 80 square ft., and in the case of wards to contain antenatal cases only to 60 square ft., with the same height of room in each case. An ordinary labour room, it is said, should be not less than 14 ft. by 14 ft. It is noted that the labour room must be suitably warmed, and for this purpose, as for other rooms in the hospital, radiators or suitable gas fires are to be preferred to coal fires. It is noted also as desirable that in every maternity home there should be a separate room available as a second labour room in an emergency.

MATERNITY HOME FOR EIGHT BEDS.

Elevation.



Plan of ground floor. Scale $2\frac{1}{16}$ inches to 60 feet.

British Medical Journal.

SATURDAY, FEBRUARY 28TH, 1920.

THE FOOD SUPPLY OF GERMANY.

IN August last we published an article giving some account of a report on the food position in Germany made by Professor E. H. Starling, F.R.S., with the assistance of Mr. Guillebaud and Mr. McDougall, after a visit to that country. The significance of the statistics it contained was pointed out. Professor Starling, in a paper read at a meeting of the Royal Statistical Society on February 18th, on the food supply of Germany during the war, did not give much additional statistical information, but took the opportunity of recording his final judgement on events which will deeply interest the historian of civilization.

The material facts are these: Before the war the food supply of Germany was abundant; it is probable indeed that the peace time estimates of the Imperial Statistical Department were exaggerated, partly because their commissioners, who were particularly competent farmers, judged others by themselves, partly because of the competition of local representatives to put the best possible face upon their results. Further, in estimating the effects of a stoppage of imports, the consequences of a loss of manures and concentrated fodders were not sufficiently attended to. These disadvantages might have been predicted; but, in addition, unpredictable disasters occurred in consequence of the bad weather conditions which, even in normal times, must have impaired the agricultural yield, and in the state of war were especially prejudicial.

But even when all these discounts are allowed there should still have been available some 3,054 calories per "man" in 1917–18. Such a diet, "if evenly and equitably divided according to the actual needs of the population, should have been sufficient to keep them from semi-starvation, although the low content of fat would have given rise to discomfort, and the protein, which was also necessarily low, might not have been enough to maintain full mental and bodily activity." But no such equitable distribution took place. The producing class consumed their full peace-time ration and did not even release the surplus for equitable distribution. From a quarter to a third of the surplus was disposed of at enormous prices in illicit trade. The result was that the farmers thrived, the very rich ate as much as they chose, and the urban poor and middle classes starved.

In so far as lack of food brought Germany to her knees, the German nation may attribute its ruin to the lack of patriotism of its own citizens. There is a grim irony in the thought that the very nation which made of nationalism a god, which bragged of its patriotism as nobler than that of all other peoples, should be ruined by class and individual selfishness. We need not, however, attribute the greater efficiency of our system of food control and distribution altogether to our superior civic virtues or genius for organization. To control the apportionment of food supplies, the bulk of which comes from abroad to a small number of great ports, is a very much easier task than to deal with home producers. A secondary inference is that, *if* the Germans had been as patriotic as they supposed themselves to be, the war could not have been ended, or at least could not have been ended in 1918, by mere famine.

With regard to the future, we cannot do better than quote Professor Starling's words: "As might have been expected, three years on a diet insufficient as to quantity and quality, indigestible, tasteless, and monotonous, had a marked influence on the vitality and efficiency of the great bulk of the urban population, which finally resulted in that changed mentality which rendered impossible any further efforts of attack or even resistance. In the condition of dull apathy and mental prostration resulting from the deprivation of food the course of the war no longer seemed of importance. Food filled their thoughts by day and their dreams by night, and the only desire was to end the war by any possible means that might lead to a slackening of the blockade and the free entry of food into the country. No means could have been more effective in breaking the spirit of a nation, which had been regarded as a danger to European civilization. Nor need we believe that the effects will be only transitory. Many years with plentiful supplies of food must elapse before the previous conditions of nourishment and health can be restored, and this recovery will be rendered difficult by the diminished fertility of the soil, and the impossibility, for a long time to come, of raising again the industrial productivity to the height necessary in order that the requisite supplies can be obtained by purchase from foreign countries. It is not surprising, therefore, that the German people, essentially docile and industrious, sick of war and of the rulers who led them into a painful enterprise, are seeking only methods by which they can restore to some extent their economic conditions and the health and comfort of the population. It will be long before this nation will be in any condition to be regarded again as a menace to the peace of Europe."

This passage starts a train of thought which is not particularly reassuring. Is it not possible that we too, although not so far advanced along the road to destruction as Germany, are nevertheless treading the same path? The problem of feeding a nation such as ours mainly dependent upon overseas supplies, burdened with debt and distracted by domestic controversy, is at least a very grave one. We should like to see some indication that this really vital problem is receiving the attention it deserves. The sort of evidence that has been tendered by both sides to the Commission inquiring into the standard of living of dock labourers is sufficient proof that we have much to learn. Before the armistice Professor Starling and other scientific men pointed out how radically defective was our knowledge of national dietetics, and on several occasions attention was forcibly drawn to the matter in our columns. Since then hardly any additions have been made, and nothing more has been heard of the proposal to create a national institute of research into the problems of nutrition. We should like to feel sure that the ends that institute was intended to compass will really be attained.

THE DOGS' PROTECTION BILL.

THE Dogs' Protection Bill, entitled "A Bill to Prohibit the Vivisection of Dogs," introduced by Sir Frederick Banbury (City of London) and supported by Sir John Butcher, K.C. (York), and Mr. Frederick Green (Leicester, West), reproduces the text of the bill of last year as it left the Standing Committee on April 3rd, 1919.

The course of the bill of 1919 was fully reported in our columns at the time. As originally introduced by Sir Frederick Banbury last year, the penalty

clause proposed that a person guilty of an offence against the provision of the first clause of the bill, which would have forbidden any experiment of a nature causing or likely to cause pain or disease to any dog, either with or without anaesthetics, should for a second offence be liable to imprisonment for three months, and for any subsequent offence to imprisonment for one year. The penalty clause as amended in Standing Committee omitted special penalties, and provided that a person violating the enacting clause should be considered guilty of an offence under the principal Act, and punished accordingly. When the bill as amended by the Standing Committee came up in the House of Commons on the report stage on May 23rd, Sir Hamar Greenwood moved an amendment on behalf of the Government to insert the words "except as hereinafter provided" in the first clause. There was a long debate, during which Sir Hamar Greenwood's proposals were supported by, among others, Mr. Rawlinson, Captain Elliot, and Sir Auckland Geddes. When winding up the debate Sir Hamar Greenwood, speaking not only as a representative of the Government but as "a willing champion of the honour of the noble profession of medicine," appealed to the House to support the amendment. To pass the bill as it stood would, he said, cast an undeserved stigma on that profession; he invited the House to make it possible for experiments to be continued because in the past they had done great good, and would in the future, he believed, do even greater good. On a division the amendment was agreed to by 147 to 69.

Another Government amendment was then accepted without a division, omitting the words in the first clause forbidding any person or place to be licensed for the purpose of performing experiments on dogs in any circumstances, and providing that such experiments might be performed on a special certificate containing a statement of reasons why the object of the experiments would necessarily be frustrated unless performed on a dog, and that no other animal was available for such experiment. The title of the bill was altered also, and as thus amended by the House of Commons the bill came up for third reading on June 27th, when its adoption was moved by Sir Frederick Banbury. Sir Watson Cheyne moved the rejection of the bill, inviting the House to decline to proceed further with a measure which would impose an unnecessary and vexatious obstacle to medical research. The motion, which was seconded by Sir Philip Magnus, who had throughout taken an active part in opposing the bill, was carried, and the bill was rejected by 101 votes to 62, but not before Sir Frederick Banbury had appealed to the House to accept it, on the ground that the bill had been greatly changed during the report stage on May 23rd. In the interval the Ministry of Health had been established, and speaking as Minister of Health Dr. Addison said that the Government, after fully and carefully considering the measure, recommended the House to reject the bill. He enumerated the precautions enforced under the principal Act; certificate (A) provided that the animal experimented upon must be fully anaesthetized and remain under the anaesthetic. That provision might be suspended by certificate (B), under which the animal might be allowed to recover from the anaesthetic. Further, in the case of a dog another certificate (E) must he obtained. It was not, he said, to the interests of science or for the promotion of the health of the people that the bill should be passed, even in its present form. The damage which would have been done had been minimized as much as possible on the report stage (May 23rd), but the Government still felt that the words as they stood would make research difficult and embarrassing, and so be contrary to the best interests of the well-being of the people. On that account the Government had no hesitation in asking the House to reject the bill, and, as already stated, it was rejected by a substantial majority.

Sir Frederick Banbury now brings up the bill again in exactly the form in which it left the Standing Committee, before the Government amendments were introduced. This fresh attempt to impede research in medicine and preventive medicine will be opposed as vigorously as last year, and Sir Frederick Banbury has placed himself, as it appears to us, in opposition not only to public opinion, but to the Government and the House of Commons. Sir Frederick Banbury was very angry when Dr. Addison said that he had concealed facts with regard to the safeguards against possible cruelty contained in the provisions of the principal Act, but he accepted the substituted phrase "failed to mention." The opponents of research habitually not only fail to mention but deliberately conceal benefits derived from it.

About the opinion of the medical profession on the matter there can be no doubt whatever. As an example of what is really thought we may recall the resolution adopted at the Clinical and Scientific Meeting of the British Medical Association in London last April. It was adopted at a conjoint meeting of the Sections of Medicine and Preventive Medicine and Pathology, over which Colonel Haven Emerson, of the Medical Corps U.S.A., presided. It was proposed by Sir William Osler, seconded by Professor C. J. Martin, Director of the Lister Institute, and supported by Sir George Makins, President of the Royal College of Surgeons of England. In putting it to the meeting Colonel Emerson said that though the bill was British the success of faddists here would encourage their kind in other countries. The same resolution was put to the Section of Surgery by its chairman, Sir Anthony Bowlby, on the proposition of Professor Bayliss, seconded by Dr. H. H. Dale. At both these meetings it was carried unanimously. The resolution affirmed that the possibility of the passage through the House of Commons of a bill to prohibit experiments on dogs was viewed with dismay, and proceeded to point out that the anatomical structure and omnivorous habit of the dog, together with the fact that it can be kept in health and comfort under the conditions imposed by laboratory work, render the larger sort the only available subject for experiment in important fields of physiological and pathological investigation. The prohibition of experiments upon dogs, in the opinion of the meeting, would have the deplorable effect of hampering the progress of medicine, and of rendering Britain alone, among the civilized nations of the world, unable to contribute to progress in a department of medical research in which it has hitherto played a distinguished part.

Sir Frederick Banbury's bill is down for second reading on Friday, March 19th, as the second order. The first order is the Shops (Early Closing) Bill, introduced by Mr. F. Briant. It may happen that this measure will absorb the time of the Friday sitting, and in any case it seems improbable that with discussion Sir Frederick Banbury will get a second reading for his bill within this sitting. If he does not its prospects of going to Grand Committee will be distinctly unfavourable; but it must be remembered that he is a past master of strategy and procedure, and that last year the bill he then brought forward made unexpected progress.

HARD HIT.

THE medical War Emergency Fund is administered by the Royal Medical Benevolent Fund, but it is a distinct fund. It is not a charity, but exists to help men to carry on who have suffered through the service they have given to the country during the war—in which the very existence of the country was at stake. The position may be expressed in the terms in which the purpose of the special parliamentary grant in aid of universities, colleges, and medical schools are set out—namely, "to meet the need of special assistance in order that they may, as far as possible, resume their full work under favourable conditions, and may not be hampered by extraordinary expenditure involved by the prolonged interruption of their activities and development caused by the war." Let it be repeated that the fund is not a charity, but an attempt to discharge the country's debt to men who have served it, and that its purpose is to help them to get back to their active part in the country's life. The fund has recently received a grant from the National Relief Fund. The medical War Emergency Fund grants will, as before, be limited to persons who have held commissions in the medical services during the war, but the contribution from the Prince of Wales's Fund will enable the committee of management to make more liberal allowances, especially for the education of children, the payment of insurance premiums, and of interest on loans. We are given to understand that the medical men for whose benefit this war tribute exists are not applying as they should for assistance in these three respects. Those who have hitherto failed to do so are invited to communicate with the secretary of the War Emergency Fund, 11, Chandos Street, London, W.1.

SPECIAL DIPLOMAS.

THE change which is coming over the organization of the practice of medicine in its several departments or specialties must be obvious to everyone who will compare the present with even the recent past. The change began before the war, and we are not sure that it can be said to have been accelerated by it, but the needs of local authorities, due only in the smaller part to State regulations and legislation, have undoubtedly intensified it. The D.P.H. has become practically essential for all undertaking public health work. Long before the war the need of specialization in tropical medicine and hygiene for the members of the medical services of tropical colonies led to the establishment of special tropical medical schools, and eventually to the institution of a diploma in tropical medicine and hygiene. The need for a similar diploma in psychiatry was for a time met by the certificate of the Medico-Psychological Association of Great Britain and Ireland, but it will be replaced eventually by diplomas granted by the universities and examining bodies. The same sequence of events is occurring with regard to tuberculosis officers and radiologists, and the policy will, without doubt, presently be extended. Thus we find that in the Ministry of Health's *Memorandum on Maternity Homes and Hospitals*, of which we give some account at p. 299, it is proposed that a medical officer attached to a maternity home or hospital should have held a resident post in an obstetric hospital; and this in all probability will eventually lead to the demand, and before long to the institution, of an advanced diploma in obstetrics for graduates. It is understood that the licensing bodies are disposed to meet the need which appears to be arising out of the new activities of the Ministry of Health and its related local authorities. Already the University of Cambridge has established diplomas in psychiatry and in radiology, and we shall we surprised if the Conjoint Board of England does not presently institute diplomas in these and other specialties as the demand grows. For some few years past Oxford has granted a diploma in ophthalmology. One moral obviously is that the need for post-graduate, or, as we should prefer to say, graduate medical schools must steadily increase. For such instruction in tropical medicine provision is made by the London School of Tropical Medicine and the sister school in Liverpool; at the Maudsley Hospital, under the direction of Sir Frederick Mott, a course of instruction, including lectures and practical work, has been instituted, based on the requirements for the Cambridge diploma in psychological medicine. Courses for the diploma in radiology instituted by the same university are being given in Cambridge and London. These enterprises are signs of the times.

SMOKE ABATEMENT.

THE Ministry of Health has resolved to make further inquiry into the smoke nuisance. There have been many such inquiries and some good has followed, but as the recent experience of London—which for several mornings this week has been smothered in a yellow fog almost as bad as a typical November infliction—shows, there is still much to be done. The law as it stands gives considerable power to check pollution by factories, and when there are a sufficient number of public-spirited persons in a district to enforce it much can be done; but it leaves the pollution of the atmosphere by domestic fires untouched. As to the relative importance of pollution by factories and domestic fires there is a difference of opinion, but the ordinary observer is driven to the conclusion that the factory chimney is not everywhere the chief offender. The Ministry of Health in another connexion has recently stated that open fires at the present time are expensive luxuries, wasteful in fuel, the cause of unnecessary noise and dust, and ineffective as sources of heat. At the present time the best substitute is gas; electricity, convenient and clean as it is, must be put aside owing to the cost of installation and current. Much more progress would have been made in using gas for cooking had the gas engineers realized that a gas cooking stove does not warm the kitchen, and that on this account people who use the kitchen much prefer the coal cooking range. This has often been pointed out, but nothing is done. In 1914 the then President of the Local Government Board (Mr. Herbert Samuel) appointed a Departmental Committee to inquire into the subject of the pollution of the air by smoke and other noxious vapours, and it had made some progress in taking evidence when the war broke out, and its proceedings were discontinued. The new committee, which has a similar reference, will have Lord Newton as its chairman; the other members are Captain Hamilton Benn, C.B., D.S.O., M.P., Professor J. B. Cohen, F.R.S., of Leeds, Mr. W. S. Curphey, chief alkali inspector Ministry of Health, Sir John Lithiby, late legal adviser to the Local Government Board, Mr. J. F. McCabe, of the Local Government Board in Ireland, Mrs. Gilbert Samuel, Mr. E. D. Simon of Manchester, Bailie W. B. Smith of Glasgow, and Mr. F. J. Willis, C.B., chief assistant secretary, Ministry of Health. The secretary is Mr. E. C. H. Salmon, to whom all communications should be addressed at the Ministry of Health, Whitehall, S.W.1.

EUSOL IN SUBTERTIAN MALARIA.

THE beneficial results that attended the intravenous administration of eusol in septicaemia inspired Lieut.-Colonel P. S. Vickerman to test it in the treatment of subtertian malaria, with highly gratifying results. Some cases were cured by one injection, others required two or sometimes three.[1] In none of the cases was quinine used whilst the patient was under treatment, nor did they require it afterwards. The number of injections had no apparent relation to the number of rings and crescents found. During treatment the crescents seemed to disappear first and the rings rather later. It was found

[1] *Journal of the R.A.M.C.*, January, 1920

to be essential that the eusol should contain at least 5 per cent. of available hypochlorous acid; it should be freshly prepared, boiled, filtered, or distilled water being used, with bleaching powder containing not less than 22 per cent. of free chlorine. The best results were obtained with the "Eupad" prepared at Edinburgh University and sent out in stoppered bottles. The technique of injection is very simple. Using an ordinary intravenous saline apparatus, the funnel and tube are first filled with saline and the needle introduced into the vein, and then 40 c.cm. of well filtered eusol are run in, sufficient saline being afterwards poured into the funnel to ensure that all the eusol enters the vein. In a case of malaria a typical attack of fever with rigor follows on the same day, and then the temperature settles down at once, although the organisms may not all disappear from the blood until ten days afterwards. In the meantime the patient feels well and has no fever attacks. Colonel Vickerman has also found eusol very efficacious in the old chronic type with large spleen and pronounced cachexia and anæmia, often showing very few or no parasites in the blood microscopically. He considers that 60 c.cm. of eusol is the maximum that can be given with safety.

THE NAVAL MEDICAL SERVICE.

DURING the past few months reference has been made, both in the JOURNAL and SUPPLEMENT, to the work of the Naval Subcommittee appointed by the Naval and Military Committee of the British Medical Association to examine and report on the new regulations for pay and retirement of naval officers. The chief matter before the subcommittee has been the position in which senior surgeon commanders find themselves under the new scheme. The new pension for these officers works out at less than 10 per cent. above the old rate fixed more than forty years ago. There is even a possibility of a deduction of 20 per cent. from this increase, giving finally an actual reduction of pension by some 10 per cent.! In its letter to the Admiralty on December 2nd, 1919, the Association made representations also as to the new ages for compulsory retirement, and the consequent loss of full-pay service and chance of promotion to higher rank. We recorded last week that the Admiralty has replied declining to deal with the case of medical officers apart from the rest of their comrades in the other branches of the service. In this connexion we are asked to draw the attention of retired naval surgeons to the fact that an Association of Retired Naval Officers exists to safeguard the interests of naval officers and their dependants, and that its policy includes an appeal that the whole question of pensions shall be reopened and reconsidered. The committee of this body is composed of representatives of the various branches of the service. Surgeon Captain E. H. Meaden, C.M.G., R.N. (retired), who is the medical member, informs us that he is bringing forward more especially the injustice done to the senior surgeon commanders. The Naval and Military Committee of the British Medical Association has referred the Admiralty's letter to the Naval Subcommittee with certain suggestions; the subcommittee feels that this matter should not be left where it is; and the Naval and Military Committee is about to consider it further with a view to taking steps to bring it again to notice. Some additional information has been received within the last few days, but we would repeat the invitation to any naval medical officer who considers that he is seriously affected to send particulars to the Medical Secretary of the British Medical Association, 429, Strand, W.C.2.

OXFORD MEMORIAL TO SIR WILLIAM OSLER.

A PUBLIC meeting will be held in the Lecture Theatre, The Museum, Oxford, on Saturday afternoon, March 6th, at 3.30 o'clock, to consider what steps should be taken to perpetuate in some appropriate manner the memory of the late Sir William Osler, Bt., Regius Professor of Medicine in the University of Oxford for the past fifteen years. The notice of the meeting is signed by the teachers in the Medical Faculty at Oxford, including Professor Arthur Thomson (anatomy), Professor G. Dreyer (pathology), Professor C. S. Sherrington (physiology), Professor J. A. Gunn (pharmacology), Dr. William Collier (Litchfield lecturer in medicine), Dr. H. C. Bazett (Welsh lecturer in clinical physiology), the lecturers in pathology, applied anatomy and morbid anatomy, and the reader in ophthalmology. The meeting will be attended by the Vice-Chancellor, the heads of colleges, Bodley's librarian, and the treasurer of the Radcliffe Infirmary. The action taken in Oxford will, we believe, command the approval of the profession generally, for William Osler was a man who had not only held a commanding position in medicine in this country during the fifteen years of his work here, but had also won the affectionate regard of members of his profession of all ages and schools. Communications should be addressed to Dr. J. A. Gunn, Professor of Pharmacology, The Museum, Oxford, who is acting as interim secretary.

PENSIONERS' RECORDS.

THE Ministry of Pensions has prepared a pensioner's record card (M.P. x 9) in respect of every pensioner for whom treatment at a hospital is arranged. This should prove of much value to the medical officer in charge of the case, as on it will be entered a brief but accurate record of the man's past medical history. The card will be issued through the Commissioners of Medical Services to the secretaries of hospitals which are not under the Ministry's control but which treat pensioners. Besides giving a summary of the pensioner's medical history, spaces are provided for the findings and recommendations of medical referees. The record card is for the information of medical officers of hospitals, but is not intended for their clinical notes; it should be kept in the special envelope provided. A medical case sheet (M.P. x 10) has also been designed to furnish medical officers with a convenient means of keeping current notes of progress and treatment. As the value of each pensioner's medical record depends largely upon its continuity, the Ministry of Pensions expresses the hope that medical officers will regularly write short notes of the cases under their care in the spaces provided. These documents—the record card, the case sheet, and the envelope with instructions—seem to us well designed for the purpose in view. In return for the valuable information given him on the card the medical officer of the hospital may not unreasonably be expected to make brief notes of progress and treatment upon the case sheet. All three documents, on completion, are intended to be returned at once to the Deputy Commissioner of Medical Services for the area.

BRITISH HONOUR FOR PROFESSOR TUFFIER.

THE announcement that the King has appointed Professor Tuffier to be an Honorary Knight Commander of the Order of the British Empire will give great pleasure to the profession in this country. Professor Tuffier is one of the most distinguished of French surgeons and is held in the highest esteem by British surgeons, not only for his learning and skill, but also for his character, in which geniality and strength are blended. During the war he rendered conspicuous services to the medical corps of the French Army, and his advice was of the utmost value in guiding the organization of the surgical hospitals from front to base. But the King's act is doubtless a recognition of Professor Tuffier's work for the wounded British officers and men brought into Paris during the early phases of the war and of his kindly and untiring efforts to make the Inter-Allied Surgical Conferences a success. It will be regarded with general satisfaction by all those who enjoyed the pleasure and privilege of working in

association with him. The appropriate insignia have been forwarded to His Majesty's Ambassador at Paris for presentation.

THE INTERNATIONAL SOCIETY OF SURGERY.

THE fifth meeting of the International Society of Surgery will be held in Paris from July 19th to 23rd, under the presidency of Professor W. W. Keen of Philadelphia. The following subjects will be discussed: (1) Surgery of the heart and great vessels. (2) Treatment of tumours by *x* rays and radium, introduced by Dr. Neville S. Finzi. (3) Analysis of the blood and biological reactions in surgical affections. (4) Treatment of fractures of the thigh, introduced by Major Meurice Sinclair, C.M.G., D.S.O., R.A.M.C. (5) Prophylaxis and treatment of tetanus, introduced by Professor S. L. Cummins, C.B., C.M.G., Colonel A.M.S. A tour of seven days has been organized to visit the battlefields, at an inclusive cost of 815 francs a person. Surgeons who wish to be nominated for election to the society are requested to communicate with Sir D'Arcy Power, K.B.E., F.R.C.S.Eng., 10A, Chandos Street, Cavendish Square, W. The subscription is 50 francs.

CHADWICK LECTURES AND MEDALS.

LIEUT.-GENERAL SIR JOHN GOODWIN, K.C.B., Director-General A.M.S., will next month give three Chadwick public lectures on military hygiene in peace and war. The first will deal with army hygiene prior to the recent war, the second with army hygiene during the recent war, and the third with the future of army hygiene. The lectures will be given at the Royal Society of Arts, John Street, Adelphi, on Mondays, March 8th, 15th, and 22nd, at 5.15 p.m. The Chadwick trustees have awarded Chadwick gold medals and prizes of £100 to Surgeon Commander Edward L. Atkinson, D.S.O., R.N., and Brigadier-General W. W. O. Beveridge, C.B., D.S.O., A.M.S., for services in promoting the health of the men of the navy and army. The nomination for these presentations has been made by the Directors-General of the naval and military medical services respectively.

THE honorary Fellowship of the Society of Medical Officers of Health has been conferred on Brigadier-General Sir William Heaton Horrocks, K.C.M.G., C.B., M.B., D.P.H., "in recognition of his invaluable services as chief of the Army Sanitary Department throughout the great war"; and on Dr. Henry Edward Armstrong, formerly Medical Officer of Health for Newcastle-upon-Tyne, "for his long and distinguished services in connexion with public health administration and the advancement of sanitary science."

SINCE the beginning of this year the Registrar-General's weekly returns of deaths from influenza in the ninety-six great towns of England and Wales have been as follows: 52, 73, 62, 85; 66, 98, 109, 161. The figures for London, which are included in the foregoing totals, have been 19, 16, 19, 24, 15, 20, 25, 37.

ON January 20th the second centenary of the death of the famous Roman physician Giovanni Maria Lancisi was celebrated in the hall of the Bibliotheca Lancisiana in Rome. Marchiafava, as official orator, pointed out that Lancisi was the herald of many modern discoveries in the fields of malaria, syphilis, and alcoholism.

THE first general meeting of the association formed by the amalgamation of the Fellowship of Medicine and the Post-Graduate Medical Association was held last week and a general council formed, nominated partly by various medical schools and hospitals and partly from the original council of the Fellowship of Medicine. The first meeting of the general council will be held on March 5th for the election of officers and the executive committee.

Medical Notes in Parliament.

Census.—Dr. Addison announced on February 18th that he hoped shortly to introduce a bill for the census of next year.

The Registrar-General's Department.—Dr. Addison stated, on February 18th, that the reorganization of the Registrar-General's Department had been receiving close attention, but no increase in the statutory fees payable by the public was contemplated. It would in any case require legislation.

The Dogs' Protection Bill.—The bill to "prohibit the vivisection of dogs," introduced into the House of Commons by Sir Frederick Banbury, with the support of Sir John Butcher and Mr. Frederick Green, is the second order of the day for March 19th. The first order of that day is the Shops (Early Closing) Bill, introduced by Mr. Briant, which may or may not occupy a large part of the session. The text of the Dogs' Protection Bill is as follows:

A Bill to Prohibit the Vivisection of Dogs.

Be it enacted by the King's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:—

1. *Prohibition of Experiments upon Dogs.*—Notwithstanding anything in the Cruelty to Animals Act, 1876 (hereinafter referred to as "the principal Act"), it shall be unlawful to perform any experiment of a nature calculated to give pain or disease to any dog for any purpose whatsoever, either with or without anaesthetics, and no person or place shall be licensed for the purpose of performing any such experiments.

2. *Penalties.*—Any person performing or assisting or taking part in performing any such experiment on any dog shall be guilty of an offence against the principal Act and punishable accordingly, and the provisions of this Act shall have effect as though they formed part of that Act.

3. *Short Title.*—This Act may be cited for all purposes as the Dogs' (Protection) Act, 1920, and the principal Act and this Act may be cited together as the Cruelty to Animals Acts, 1876 to 1920.

Experiments on Animals.—In reply to Sir Frederick Banbury, the Home Secretary said that the form of the returns relating to experiments on animals would be considered in due course. He hoped it might be possible to give nearly the same information as was given before the war, but he must have regard to the requirements of the Select Committee of the House on Publications.

Maternity Homes.—In reply to Mr. Clough, Dr. Addison said that his department had for some time pressed upon local authorities, both in general circulars and in individual letters, the importance of providing and maintaining maternity homes, and had obtained Treasury sanction for a grant of half the approved expenditure on these purposes. During the last year or so about twenty-five such homes were established by municipal authorities, and about twenty by voluntary bodies, who as a rule received financial assistance from local authorities. Many similar homes had been planned, and were likely to be established in the near future. (An account is given at page 299 of the Memorandum issued by the Ministry on the planning and organization of maternity homes and hospitals.)

Proposed Dental Legislation.—Asked by Mr. Raffan, on February 19th, whether legislation would be introduced this session to carry out the recommendations of the Departmental Committee on the Dentists Act, 1877, Dr. Addison said it was hoped to introduce legislation during the session, but he could not yet make a definite statement.

Retired Naval Officers' Pensions and Income Tax.—Mr. Long, in answer to Rear-Admiral Adair, on February 18th, said that retired naval officers who were called out during the war were not eligible to count such service for increase of retired pay, but, in lieu thereof, were granted a bonus of 25 per cent. upon their full pay during service. All such officers, however, were eligible to have their retired pay in respect of service before retirement re-assessed upon the revised scale introduced last year. The Government had decided that as from April 1st next income tax was to be charged on the assessable service emoluments of naval officers at the ordinary rates applicable to the rest of the community. The principle was decided upon when the new increased rates of pay were sanctioned. Viscount Curzon asked whether in Admiral Halsey's report it was recommended that if the service rate of income tax were no longer to be charged the question of pay would have to be reconsidered. Mr. Long replied that when the question was finally considered that recommendation was not adopted. Sir E. Carson put it that in some cases the income tax would nearly swallow up the increased pay. Mr. Long did not accept this, and said that new rates always at first affected some old conditions.

Precautions against Influenza.—In reply to Lieut.-Colonel Raw, Dr. Addison, on February 23rd, said there had been a slight increase in the number of deaths from influenza during recent weeks and a few outbreaks in schools and other institutions, but otherwise there was no evidence of unusual prevalence of the disease in this country comparable to the definite new waves of influenza which were occurring in American cities and on the Continent. The Ministry of Health kept a constant watch on the occurrence of influenza at home and abroad. Information was derived from returns, from consular agents, and other

official sources all over the world. Information as to the prevalence of the disease at home was obtained from the weekly return of influenza mortality in the ninety-six great towns, issued by the Registrar-General, and from returns of cases of acute influenzal pneumonia, the notification of which was now obligatory in England and Wales. Returns of cases of influenza were also furnished voluntarily every week by a number of schools, institutions, and representatives of industrial firms throughout the country. All data on the subject, statistical as well as scientific, came before an Influenza Committee, a medical standing committee of the Ministry of Health, holding frequent meetings, and on which sat medical representatives of various Government departments. A vaccine against influenza was now being issued on demand to medical officers of health for distribution free of charge among medical practitioners. All practicable means of protecting the country from the introduction of influenza through the ports had been considered. The knowledge and experience accumulated during recent epidemics had been collected and issued to local authorities. A memorandum had been issued to local authorities explaining the measures (both administrative and personal) which were deemed best calculated to prevent the spread of the disease and lessen its mortality. A popular leaflet had also been issued and widely circulated to local authorities setting out the best measures of guarding against infection, with advice to patients as to the best known means of securing a speedy return to convalescence and the avoidance of those complications which constituted the special danger of influenza. Special inquiries were being pursued in selected districts into such questions as immunity, the effects of overcrowding, and incidence according to age. In certain of these areas arrangements had been made, in consultation with the Medical Research Committee, for the co-operation of medical officers of the Ministry, medical officers of health, and bacteriologists, in the investigation of the origin, the spread, and the best means of combating the disease.

Ministry of Health Expenditure.—Dr. Addison, in reply to Mr. Godfrey Locker-Lampson on February 18th, said that the recent establishment of the Ministry of Health obviously made it impossible to reduce the staff. Every effort, however, had been made, to the satisfaction of the Treasury, with whom the detail of the organization was worked out, to secure the utmost economy in the staffing arrangements.

Vaccination Statistics.—Mr. Charles Edwards, on February 18th, asked the Minister of Health if he were aware that more than half the children born at the present time were withheld from vaccination; whether the proportion of unvaccinated children of each year's birth was steadily increasing; whether nearly 40 per cent. of the births each year were exempted from vaccination by the statutory declaration of objection by the parents; and whether in the circumstances the compulsory clauses of the Vaccination Acts should not be repealed. Dr. Addison replied that the figures were approximately as stated. He was, however, of opinion that the repeal of the compulsory clauses would result in a still larger proportion of children remaining unvaccinated, and thus the whole community would be less protected. Small-pox was prevalent at the present time in various parts of Europe, Canada, and America, and in view of the risks of the introduction of the disease into this country he was not prepared to take any action which would tend to increase the number of persons in this country who were unprotected.

National Insurance Finance.—In answer to Captain Coote, on February 18th, Dr. Addison said that the revision of Health Insurance contributions and benefits had been under consideration for some time, and he hoped to introduce an amending bill at an early date.

Treatment in Army Mental Hospitals.—In reply to Major Steel, on February 18th, the Secretary of State for War said that strict inquiry had been made into every complaint, whatever its nature, made with regard to the treatment of men in army mental hospitals. In no case had it been found that there was ground for serious complaint, and the suggestions of careless treatment and of deliberate ill treatment in these hospitals were unjustified. The utmost care had been taken in the treatment of soldiers suffering from early mental disorders, and the system of treatment followed, which was adopted after consultation with the most expert authorities on the subject, had been acknowledged by those best qualified to judge to be in some respects an improvement on the system generally adopted in civil mental hospitals. The results had been highly satisfactory, as was evidenced by the higher recovery rate and lower death rate as compared with civil institutions of similar type. The general allegations made against the officials of the army mental hospitals and the Army Medical Service were entirely unjustified, and he saw no occasion for ordering an inquiry of the nature suggested. The matter was raised again during the debate on the Army Estimates on February 23rd, when the Financial Secretary (Sir Archibald Williamson) said that the War Office was prepared to offer every facility for the fullest inquiry and investigation on a prima facie case being shown. It was not prepared to hold inquiries without some grounds for such action being shown, but if any responsible body of people could bring forward an allegation which seemed to have some basis the War Office would at once order an investigation. In the course of the debate on the Army Estimates in the House of Commons, on February 23rd, Mr. Spoor (a Labour member) raised the question of the treatment by the War Office of mental cases. He quoted a statement from a newspaper to the effect that between twenty and thirty thousand shell-shock patients had been treated in the military hospitals, and that many of the brave men sent back from France, speechless or witless for the time being through shock, were given the treatment of prisoners in gaol. The paragraph went on to say that many of the men spent long weeks or months in solitary confinement, in cells destitute of furniture, and not even provided with a chamber utensil; further, that all letters written were subject to severe censorship, and that the patients were "at the mercy of callous and arrogant warders, who punished the least complaint or reluctant obedience by physical violence of an inhuman kind." Asked the name of the journal he was quoting, Mr. Spoor stated it was the *Daily Herald*, and this announcement being greeted with laughter, Mr. Spoor said he could not understand that there was any reason for that laughter. If there was the slightest element of truth in the allegations—and other papers had also quoted examples—there was every justification for an immediate inquiry. Sir Archibald Williamson (Financial Secretary to the War Office), replying, said that he had a document before him which dealt with the whole treatment of neurasthenic and mental cases in detail. In 1915 the President of the Royal College of Physicians, at the invitation of the Army Council, arranged for a Committee of Members of the College to visit the various military hospitals in which nerve shock and mental cases were being treated, and to submit a report on the adequacy or otherwise of the arrangements made for the care and treatment of the patients. There was a report which was satisfactory, and further supervision had been had of these hospitals and asylums and patients.

Service Women's Compensation.—Mr. Stanley Baldwin, Financial Secretary of the Treasury, made a statement on February 19th as to compensation to women disabled and discharged from Queen Mary's Auxiliary Corps, the Women's Royal Naval Service, and the Women's Royal Air Force. The women who entered these corps were enrolled, like other persons engaged in ancillary services, on a footing that differed little from that of ordinary employment, except in the case of those enrolled for service overseas, for whom a special scheme of compensation, under the Injuries in War Compensation Act, was framed. Under the Workmen's Compensation (Addition) Amendment Act, recently passed, an addition of 75 per cent. instead of 25 per cent. was being made to the weekly amount payable under that Act, and this applied to the three women's corps whose employment brought them within the scope of that Act, and who were disabled by injuries sustained in the United Kingdom.

The Professional Training of ex-Service Men.—In reply to Mr. Alfred Davies, on February 23rd, Sir Robert Horne said that assistance in training for the professions was given to disabled and able-bodied ex-service men by the Appointments Department of the Ministry of Labour, in conjunction with the Board of Education and the Agricultural Department. Advice was given as to appropriate training, vacancies or classes, and the payment of maintenance grants to suitable candidates. Grants had been made by the Labour Department to 1,138 men training as solicitors and to 1,920 training as accountants. The President of the Board of Education had sanctioned grants to some 2,408 men training for the medical and dental professions.

Pensions Medical Officers' Remuneration.—In answer to Major Henderson, Sir James Craig, on February 23rd, said that in the London area half-time medical officers employed by the Ministry of Pensions were paid a fee by session of 2½ hours. The fee varied from 1½ guineas to 2 guineas according to the class of work required. Whole-time medical officers in the London area were paid annual salaries ranging from £750 to £1,200.

The Cost of Quinine.—Asked by Mr. Glanville, on February 23rd, why an official of the Ministry of Munitions was on the Profiteering Committee, and whether all files and documents appertaining to quinine in the Foreign Office, Ministry of Munitions, and the War Office were submitted to the Committee, Mr. Kellaway replied that an official of the Ministry conversant with the dealings in quinine was asked by the Board of Trade to serve on the Committee of Inquiry. So far as the Ministry of Munitions (War Office contract section) was concerned, no information was withheld. Mr. Glanville inquired whether Mr. Kellaway had any statement to make as to the quinine transaction conducted by his department with the British Quinine Corporation, criticized in the Board of Trade Profiteering Report. Mr. Kellaway thought that the report did not call for any statement.

Army Masseuses.—Sir A. Williamson (the new Financial Secretary to the War Office), on a question by Major Hurst, said war gratuities, broadly speaking, were given to commissioned officers and enlisted soldiers, and were not given to the very large numbers of civilians, men and women, who in various ways worked for the army during the war. An exception to this rule was made in the case of Queen Alexandra's Imperial Military Nursing Service and other staff performing similar duties, for special reasons and in accordance with precedent; but after full consideration he was not prepared to extend this exception.

Hospitals in India.—In reply to Colonel Yate, the Secretary of State for India stated, on February 16th, that the extra hospital accommodation and equipment and the appointment of fully trained nurses for family hospitals formed part of an extensive programme for the improvement of hospitals in India which had been accepted on the recommendations of the Makins Committee, and was being undertaken as funds permitted.

England and Wales.

DISTRICT NURSING IN LONDON.

THE annual meeting of the Central Council for District Nursing in London is being held in London this week. The chairman is Sir William J. Collins, and the vice-chairman Sir Thomas Barlow. The executive committee has elected as its chairman Mr. E. B. Turner, F.R.C.S., who, together with Dr. T. W. H. Garstang and Dr. M. G. Biggs, represent the British Medical Association upon the Council. The fifth annual report states that the year 1919 was full of new problems and of fresh needs and opportunities brought about by the advent of peace and the abnormal state of the country. Amongst the sections of the community in need of assistance at the present time are the so-called "new poor." The attention of the executive committee was drawn afresh to the needs of "visiting nurses" for persons of limited income by letters in the press from Sir Richard Douglas Powell, who, at the request of the committee, has now joined the Council; with his aid it is hoped that effective action may be taken in the matter this year. The release of numbers of nurses from military service has done much to ease the pressure of work on the staffs of the District Nursing Associations, but the difficulty of meeting emergency and special cases by their regular staffs is still very great. The time was therefore thought ripe to organize a panel of nurses willing to undertake temporary work. The report states that from the surplus funds of the British Red Cross Society £10,000 will be entrusted to the Council for distribution to the metropolitan nursing associations, special consideration being given to the work done on behalf of ex-service men. Further steps will be taken to supply nurses for the areas in London still unprovided with nursing services. The Council records its sense of severe loss in the departure of Sir Arthur Downes, who has left England and can no longer give further active assistance, but his interest in the work is unchanged.

HOSPITALS AND CLINICS AT CARDIFF.

The financial position of hospitals, which renders acute the need for a settled policy for their future development and maintenance, is engaging attention in every part of Great Britain. It was discussed last week at a meeting of the Health Committee of the Cardiff City Council, when Dr. Edward Walford, Medical Officer of Health for Cardiff City and Port, and lecturer in public health in the Welsh Medical School, referred to the difficulty of housing the clinics. The premises of the tuberculosis dispensary maintained by the Welsh National Memorial were, he said, unsuitable; the sanitary authority hoped that the clinics supported by it might all eventually be conducted in connexion with the out-patient department of King Edward VII Hospital, Cardiff; Dr. Walford suggested that the hospital authorities should be asked to include the tuberculosis clinic. If this were done all the clinics supported or subsidized by the sanitary authority would be under the same roof. It was, however, clear that the hospital authorities were not at present in a position to offer facilities for this plan. Alderman Dr. J. Robinson, who was in the chair, expressed the opinion that the King Edward VII Hospital should be converted into a casualty clearing station to receive emergency cases, and to serve as head quarters for the various clinics, all other cases being provided for in a building somewhere outside the town. It was objected that the provision of another building would necessitate an expenditure of three-quarters of a million; but Dr. Walford observed that the sanitary authority would contribute largely, and that there would be a saving to the ratepayers in cost and a gain of efficiency in the working of the various clinics. Dr. Robinson, in suggesting the establishment of a hospital for all save emergency cases outside the city, was no doubt thinking of the Rookwood scheme, which was initiated in September, 1918, for the benefit of wounded soldiers and sailors requiring prolonged treatment, and afterwards for pensioners, but with an eye to its use for civilian patients in the future. The estate, which extends to some twenty-five acres, is situated on the outskirts of Cardiff, and is easily accessible from the centre of the city. It would provide a site sufficiently large to allow differentiation of buildings so as to adapt them to various classes of cases.

Correspondence.

MEMORIAL TO THE OFFICERS AND MEN OF THE R.A.M.C. WHO FELL IN THE WAR.

SIR,—May I venture to bring to the notice of any of your readers who may be unaware of the active prosecution of the above project the following particulars:

A committee representing every branch of the R.A.M.C. has been formed under the presidency of the Director-General Medical Services. This committee has decided to erect a memorial bearing the names of all officers and men who fell during the war, and place this upon a prominent site in London, and if funds permit to erect replicas in Edinburgh and Dublin.

The monument will stand in honour of the entire profession, and the project should also appeal to the many who received help at its hands in the hour of strenuous need.

A sum of some £10,000 has been already collected by army commands, but it is estimated that at least £30,000 will be required if the monument is to be made worthy of the men to whose honour it is to be dedicated.

Subscriptions may be sent to army commands or direct to the treasurers of the fund, Messrs. Holt and Co., 3, Whitehall Place, S.W.1, marked "R.A.M.C. War Memorial Fund."—I am, etc.,

London, S.W., Feb. 20th. G. H. MAKINS.

THE INDIAN MEDICAL SERVICE: IS IT WORTH WHILE?

SIR,—In your issue of September 13th last there is an announcement that the Secretary of State for India requires 206 men for the Indian Medical Service, and that 33⅓ per cent. increase in the grade pay had been sanctioned. Since then (see SUPPLEMENT to BRITISH MEDICAL JOURNAL, November 8th, 1919, p. 105) the interesting information has been elicited that, according to India Office calculations, an average increase of 22 to 26 per cent. only is being received by I.M.S. officers—that is, taking their whole pay into account.

This is brought about by the conferring of a flat rate of pay irrespective of the work done by the officer, and the abolition of all allowances for charge of followers, cantonment hospitals, or vacant regiments. The result has been the creation of a sense of grievance in the service, for the general belief was that as grade pay only was affected by the increase, the allowances would remain as before, or when the station hospital system was introduced, that compensation for these allowances would be given, so that officers should not suffer loss through change of system.

For many years before the war, owing to insufficient cadre, it was the rule for officers to have charge of other regiments than their own, and often more than one during the hot weather, and so to draw Rs. 100 a month extra on the average throughout the year.

Let us take an actual concrete case—a major of thirteen to fourteen years' service in medical charge of a cavalry regiment. At the old rates of pay this officer received:

Grade pay	Rs.	650	per mensem
Staff pay	,,	150	,, ,,
Horse allowance...	,,	90	,, ,,
Estimated average of extra charge allowance	,,	100	,, ,,
Total	Rs.	990	per mensem

When the first revision of pay was made in December, 1919, on the introduction of the station hospital system, which allowed charge pay for command and second in command of station hospitals, the above officer received the following:

Grade pay	Rs.	750	per mensem
Charge pay for first-class station hospital	,,	240	,, ,,
Total	Rs.	990	per mensem

It will be clear, then, that this officer drew exactly the same pay under the station hospital system as he did under the regimental system. The second revision of pay which is now in force allows this officer a consolidated pay of Rs. 1,000 per mensem, however he is employed. Thus this officer has received an increase of Rs. 10 a month only, and not an increase equal to 33⅓ per cent. of his old

grade pay. When such a case is possible can you wonder, Sir, that the service grumbles.

Let us now examine the financial position of the above major. If he is a bachelor he can manage comfortably on his pay. If recently married or has no family, then he can probably just clear expenses. But let us suppose he married at 30, after five years' service, and has now three children, aged 8, 6, and 4 years respectively. Two of these children must be kept in England, the elder probably at a preparatory boarding school.

The father must remit money for these two children, and this may be put at £300 a year as a minimum. At present, of course, this remitting is more easily done than formerly, owing to the fall in exchange, but for the sake of argument let us take the value of the rupee at 1s. 8d. His monthly expenditure will probably be:

Deduction for income tax and family pension fund	Rs. 78 per mensem
Home remittance at £300 a year ...	,, 300 ,, ,,
Insurances, say £22 a year ...	,, 22 ,, ,,
Total	Rs. 400 per mensem

This leaves a balance of Rs. 600 a month for the living expenses of himself, wife, and youngest child in India. Now it is doubtful whether, with the present increased cost of living in India, this family could live in a plains station on this amount, but we will suppose that with rigid economy it is *just* possible. There remains to be considered how our friend is to meet the expenses of sending his wife and child to the hills for, say, four months in the hot weather. This is an essential minimum in most parts of India.

Cost of wife and one child in a hill station	Rs. 450 per mensem
Expenses of husband in the plains	,, 300 ,, ,,
Total	Rs. 750 per mensem

That this is not an exaggerated estimate may be judged by the fact that only the hotel expenses of wife and child are taken into account; nothing is allowed for expense of journey, provision of warm clothing for child and servants, pocket money, social duties, etc.

The husband must keep on the house in the plains and most of the servants, so that to keep within the Rs. 300 he will have to live more or less the life of a hermit. You yourself say that, "We are advised that an officer without a family should be able to live on 400 rupees a month in India" (BRITISH MEDICAL JOURNAL, January 17th, 1920, p. 93). It is evident, then, that during the four months of hot weather separation he has to spend at the lowest estimate Rs. 750 a month with only Rs. 600 available. In four months he will be 600 rupees in debt. The position of this officer—and the case is an actual one—is financially appalling, yet it is a common one. Instead of being forced into debt he ought to be saving up money for home passages and the cost of keeping himself and family during his furlough.

That this stringency is not confined to the I.M.S. is evident from the recent revision of pay sanctioned for all other officers of the Indian army and various of the civil services in India. The following comparative table shows these revised rates. It will be seen that the I.M.S. is the lowest paid of any.

Rank.	Indian Cavalry.	Indian Infantry.	Supply and Transport.	I.M.S.
	Rs.	Rs.	Rs.	Rs.
Lieutenant	625	575	725	550
Captain	850	800	950	700
Captain after nine years ...	950	950	1,050	800
Major	1,150	1,100	1,300	1,000
Major after five years, second in command	1,250	1,200	1,450	1,150
Lieut.-Colonel in command.	1,850	1,750	1,700-1,950	1,500-1,650

The Educational and Forest Services have also had revised rates of pay sanctioned for them. The former begins on Rs. 550 and the latter on Rs. 450 a month, and both receive annually an increase of fifty rupees a month. Thus an educational officer after eight years' service draws Rs. 1,000 a month, and a forest officer does so after ten years. The I.M.S. officer does not do so till after twelve years' service. At twenty years' service the educational officer draws Rs. 1,500, while the I.M.S. officer is still drawing only 1,150. Why is this difference made? Does this represent the comparative values of the services as estimated by the Government of India?

It thus appears that the medical officer is the worst paid of any of the principal services in India. This fact should be known to the profession, and when it is known it does not appear likely that Mr. Montagu will get the recruits he is asking for, and which are so urgently required to allow of the overwrought officers getting their overdue leave. Is the public aware that over 120 I.M.S. officers are at present home on sick leave, and that only eight months' leave is being granted to anyone at present serving in the I.M.S. in India? Many officers have not been home for over ten years, and yet these same officers were promised furlough every five years when they joined.

Facts like the above should be made known to intending recruits so that men may realize what they are letting themselves in for. Nothing less than the terms stated by Colonel Elliot before the Secretary of State at the India Office on October 30th last will satisfy the I.M.S. These terms are: (1) Increase of pensions; (2) free passages to and from India; and (3) an increase of pay of 50 per cent. on the total pre-war pay.—I am, etc.,

"I.M.S. RETIRED."

PUBLIC HEALTH VERSUS THE STATE.

SIR,—I am obliged to Dr. Davies for his criticism. If he admits that destitution has been a large factor in tuberculosis mortality he has gone far towards accepting my position. If destitution destroys then surely privation predisposes. Destitution is a comparatively simple problem if you may spend public money lavishly. But "what the State gives to the working class it first takes from the working class, and returns it *minus* the cost of collection and of (far more important) distribution." The problem of the borderland class, not actually but easily becoming destitute, is of an infinite complexity. It is they who feel taxation, especially indirect taxation, most acutely. If real wages have been reduced in their case by paternalism, Dr. Davies cannot argue that the cost of municipal and State benevolence falls on the rich. His admission that they have been so reduced is the concession of my position. It is but a question of degree.

My paper had to be condensed else he would have known that housing was one part of my indictment. I had compared the conditions of twenty years ago—landlords competing for tenants—with to-day when tenants are competing for landlords. Let him compare the successful work of agencies like the Peabody, which cost the public nothing, with the municipal schemes involving a heavy burden on the rates, and ask himself how far the pre-war checking of private enterprise has been the cause of the frightful *impasse* of to-day. Given high real wages the houses would have been built, and were, while they were high, in excess.

The chief causes of the present rise, he says, are alcoholism, bad housing, and the like. He boasts that all these have been ameliorated, which necessarily means they were worse while the rate was falling. He cannot have it both ways.

The gravamen of my charge is that meddlesome legislation aims at stamping out the disease rapidly—in vain: it can only be by patient service of natural law. It is not reasonable to accuse me of pursuing the lightning tactics. Infection probably plays some, if not a great, part; with a drop of well on to 2,000 per million in fifty years, we had a right to expect an accelerating fall. But I left it at the arithmetical progression. If the rate had steadily fallen for so long by 200 in each five years, by now it should have been in the neighbourhood of 400. We are entitled to ask officialdom, now that it can control us so much more than ever it did before, why it should be about 1,200. It is no answer to plead the continuance of old conditions when in the same breath you boast that they have been vastly improved.

The "cult of the child" began long before the State and municipality adopted it as their own. Dr. Davies is hardly fair to ignore the immense effect of voluntary effort. Paternalism came too late into the field to be able to claim the entire credit of the advance in the

tuberculosis of childhood; but it is already possible, if you relentlessly track it down, to trace some of the mischief it has done in other directions, while perhaps relieving individual children.

Condensation again has given an erroneous impression of what I had said. I submitted that two to three years was not an excessive estimate for the length of time in fatal cases from the date your patient first comes to you to his death. It is about the average in my own experience, and the submission met with no objection from my audience. I am ready to admit that adverse influences may act more quickly to depress than favouring to raise. But we are dealing with thousands of cases, and it can scarcely be a coincidence that the charts bear out so many men's experience.

Of the list of diseases he gives, except for cancer, I cannot believe that any would fail to be influenced for the good by the more equable distribution of wealth which has been proved in England and America to accompany *laissez faire*. The cause of cancer we do not know; let me remind Dr. Davies that we do know that of tubercle, and that at one time it was plainly being checked.

He says that the rate of the fall of tuberculosis was not appreciably checked before 1913. It is sufficient, since the Registrar's figures do not convince him, to remind him that Professor Karl Pearson pointed out the fact, certainly before 1913. If it was appreciated, it must have been appreciable.—I am, etc.,

Rayleigh, Essex, Feb. 22nd. B. G. M. BASKETT.

P.S.—Since writing this I have received from a correspondent in the United States, who is leading the opposition to a stupid attempt to introduce an "Insurance Act" into America, some additional tuberculosis charts. It therein appears that in Massachusetts the rate from 1890 to 1913 has fallen by 57 per cent.; that New York had by 1913 passed Berlin, Massachusetts, Prussia, Newark, and Leipzig; and that over the United States registration area the general rate had fallen in 1912 to 1,370 per million. Surely, with all the other facts, this should be conclusive. If we are no longer to set examples, in the name of common sense let us imitate the voluntaryism of Denmark with its lowest of all rates, or of the United States with its rapidest of progress.

THE TERRITORIAL FORCE.

SIR,—A campaign is commencing, having for its object the formation of the new Territorial Army. Many doctors will be debating mentally the advisability of joining, and perhaps the experience of some of the older T.F. officers will help them to make up their minds. Early in the present war it was a common thing for the Boer war men to say that the War Office would find some way of doing the volunteer out of his pay and gratuity; in fact, I know of one man who sold his gratuity for £5. He made a bad speculation certainly, but, now that the war has officially ended, one can definitely say that the R.A.M.C. officer who was a Territorial was shabbily treated. One cannot criticize the matter of honours, for they are given, deservedly or not, only on the recommendation of one's superior; but hard cash as received by the individual officer forms a definite means of comparison. During the war the question of T.F. pay was always hidden by the answer that at the end of the war everything would be evened up.

My experience has been this. In August, 1914, I was a specialist on the staff of a general hospital, and had held a commission in the T.F. for five years. I pushed off with my field ambulance, and in November, 1914, was promoted lieutenant-colonel (temporary). I commanded a field ambulance for nearly two and a half years, and was then transferred to a certain post, and, of course, reverted to my permanent rank of captain. In March, 1919, I was demobilized. My pay, *plus* allowances at the end of the war, was exactly 4s. a day less than the lieutenant R.A.M.C. qualified in 1918. My gratuity was that of a captain, and, in spite of Army Order 117 of 1919, I cannot draw the higher rate because, like all the early promotions, mine was gazetted as "temporary," whereas later, to avoid confusion between temporary commission and temporary promotions, the wording was altered to "acting," and in the Army Order "acting" is referred to.

Now, Sir, if I had, instead of joining the T.F., remained at my hospital I should have held the same rank (at least) and I should have retained my practice, and been able to keep my house instead of having to sell it for £1,500 less than I can now buy it back for. Incidentally, I should have been doing useful work instead of absolutely wasting five years, at work that any competent civilian could have done, in a field ambulance. My colleagues on the hospital staff automatically became lieutenant-colonels and majors, drawing the pay and also the gratuity of their ranks. It may be asked, why did I not ask for special work at my hospital? In August, 1914, I was told no specialists were required, and in 1917, when I applied to the D.D.M.S. Western Command for my appointment no answer was received. My advice to any young doctor who thinks of taking a commission in the Territorial Force is that it will pay him far better to wait until he is conscripted.—I am, etc.,

February 24th. "T.F."

PROTECTIVE INOCULATIONS AGAINST INFLUENZA.

SIR,—Sir William Leishman's article upon the results of protective inoculations against influenza raises many interesting points. First, it seems to prove that Pfeiffer's bacillus, as I have consistently maintained on the strength of my own bacteriological investigations, is the essential cause of influenza—the parallelism of the intensity of the epidemic and the dominance of the influenza bacilli, and the protection apparently afforded by the increased strength of the influenza "vaccine," greatly strengthening the claims of this bacillus to this doubtful honour. Further, there may be some justification for extending these observations in the army, because efficient control can be exercised, and the incidence of the disease is likely to be greater among soldiers congregated in masses than in the general population.

Even these army records disclose some striking dissimilarities. The Western Command, the Scottish Command, and the London District, aggregating over 8,000 soldiers, show 600 cases of influenza and not a single death, and the incidence of influenza is even greater among the inoculated. Again, the great majority of deaths occur in two districts—York and Maidstone—among 7,297 units—that is, among 11 per cent. of the total (59,144). What local influence was at work to explain this high death rate? Was the influenza bacillus working in virgin soil? It is most important to determine whether the soldiers have ever suffered from influenza.

It cannot be argued that these inoculations protected unless we know for certain that the said soldiers had not been protected by an attack of influenza at some previous period; and it is conceivable that those who had had influenza already would be the more ready to submit to inoculation. The value of antityphoid inoculations could not be proved by inoculating those who had had typhoid fever before inoculation. The immunizing effect of antityphoid and anticholera vaccines can be demonstrated in the guinea-pig. I know of no experiments in animals which show the immunizing action of specific vaccines in influenza and its streptococcal complications. It is quite possible that Sir W. Leishman has positive evidence of this kind. If so, it should certainly be published in the interests of science.

However, I am not concerned with the wisdom of this procedure for the safety of soldiers. I wish to view the problem as it affects the civil population. The Ministry of Health has given its approval in a Memorandum, and its action is open to serious criticism. Ordinary people accept the approval of the health authorities as a substantial argument in favour of wholesale inoculation, and well-to-do people are keeping their doctors busy. I cannot think that doctors fully explain the reasons for and against inoculation. Perhaps they have not thought them out. The public have a right to know the common sense of wholesale inoculations, and then can decide for themselves.

If the policy of the Health Department is sound, inoculations should be widely practised among the poorer classes, because they suffer most and die most from influenza. If it is in the nature of an experiment, the experiment would be far more useful and instructive in hospitals and schools, when the patients could be controlled and supervised, than in private practice, when the work is casual

and uncontrolled. At hospitals there is also the control of the laboratory and the mortuary.

I will now briefly state the obvious objections to preventive inoculations against influenza:

1. Not I, but many, hold that the cause of influenza is not known. Non-specific "vaccines" are of no avail. But it is urged that the streptococcal complications are the cause of death. Perhaps sometimes, not always. But granted they are, what experiments upon animals prove that specific streptococcal "vaccines" protect against a virulent attack of the haemolytic streptococcus? In the case of typhoid fever, cholera, diphtheria, and tetanus the protective agent is specific, and its virtues can be demonstrated in animals. Not so with regard to the "vaccine" of either influenza or its complications.

2. What is the chance of an epidemic of influenza appearing in such a form and spreading so widely that protective inoculation would justify itself and its advocates? Very small. The epidemic is not likely to be even as severe as the epidemic of 1917. In 1917 influenza caused 750 deaths in London with a population of 4,000,000, measles 1,900 deaths in children under 5, whooping-cough 550 in children under 5, diphtheria 350 deaths in those under 5, puerperal fever 873 deaths in a select group of women. Now, if the policy of protective inoculation is sound, there is far greater reason for applying the principle to these restricted groups than to the protection of the whole population against influenza. Why is this "plunge in the dark" justified in the case of influenza if it is not made to protect the individuals belonging to a far smaller and more easily defined group, and suffering from diseases of a similar nature? The experts will find it difficult to supply an answer.

3. But there is another point, which should give this protective inoculation, as a public health measure, its quietus. In London's population of 4,000,000 persons there were 750 deaths from influenza in 1917. Thus, if protective inoculation is perfect, it is necessary to inoculate 5,330 persons—once, twice, or thrice—to save one life. To save one life a single doctor would have to give 100 inoculations a day, or double or treble that number, and work continuously for two months, not counting Sundays. He himself might die in the attempt, or—still worse—one or more of the inoculated multitude might die from the inoculation itself. Personally I think that if the doctor has to become a slave of this sort the risk of one or more deaths in 10,000 or more inoculations is more than probable. And what a waste of energy and money! At least £10,000 spent on the advice of the Ministry of Health for such a futile object as the inoculation of 5,330 persons out of a population of 4,000,000 in a vain effort to save one life.

If physicians are still inclined to recommend protective inoculations to their patients who are afraid of influenza, I trust that the patients may learn for themselves the common-sense view of this proposal, and think twice.—I am, etc.,

W. CAMAC WILKINSON, M.D., F.R.C.P.

London, W., Feb. 19th.

NASAL DRILL.

SIR,—Dr. Hickling's interesting paper in the JOURNAL of January 31st will, it may be hoped, lead to improved methods in this increasingly popular mode of treatment; but I feel that sufficient stress has not been laid upon the two essential features of the drill—namely, not to close the nostrils when blowing, and to breathe in. The old tradition of mothers and nurses that children should be taught to blow their noses thoroughly is responsible for an immense amount of damage to nasal mucous membrane. A handkerchief used in the ordinary manner does much harm to the nose, and yet the majority of people seem to think that nasal drill consists mainly of forcible nose-blowing. The ordinary method consists of alternately closing and opening the nostrils during a fierce expiratory effort. The effect of this, in addition to expelling the excretion, is to fill up with blood the turbinated bodies and the nasal mucous membrane generally. This causes further secretion. Then follows more nose-blowing, and a vicious circle is established. Forcible inspiration depletes the nose of blood and stops secretion.

Almost anyone can produce a chronic nasal catarrh by continued nose-blowing in the ordinary way, and the majority of nasal catarrhs can be stopped by a course of deep inspirations, blowing the nose only when absolutely necessary and then without closing the nostrils. For instance:

I saw a girl who was in constant misery on account of an old-standing nasal catarrh. The turbinated bodies were engorged, and secretion was pouring from her nose in an almost constant stream. I horrified the child's mother by saying that the chief thing she needed was not to possess a handkerchief. I was told that she would not be fit to be seen without a handkerchief, so I advised her to shut herself up in her house for a few days and follow the instructions I laid down with regard to blowing and deep inspirations. Three weeks later I saw the child again, when the mother said that an extraordinary change had come about. Before I saw her she used twenty-four handkerchiefs a day and never had a dry one; now she had only one handkerchief a day and never had a wet one.

In another case a lady complained that all her children suffered from severe nasal catarrh which no remedies or nose-blowing would relieve. All were very susceptible to taking fresh colds, and one boy had frequent nose-bleeding. Recently the lady told me that for two years after following my directions all the catarrh and nose-bleeding had ceased, and the children had remained entirely free from fresh colds until a few weeks ago, when all the troubles returned as badly as ever. It was then found that a new governess had instituted a system of nasal drill every morning before beginning lessons. When this was stopped the nasal troubles ceased at once.

It is doubtful whether any benefit is derived from induced sneezing, and I am sure that Dr. Hickling makes a mistake in including menthol in the snuff she uses. The continued use of any preparation containing menthol is harmful. The immediate effect is pleasing, but there follows a hyperaemic reaction which ultimately becomes the predominating factor. The only other commonly used drug, which has a more deleterious effect, is adrenalin.

I believe that Dr. Lapage is mistaken in his opinion that "the majority of tonsils and adenoids are due to infection" (BRITISH MEDICAL JOURNAL, January 31st, p. 148). There is, I consider, convincing evidence that enlarged tonsils and adenoids are mainly due to orthodox nose-blowing and too much night air, which produce a constant hyperaemia and increased activity of the adenoid tissue.—I am, etc.,

London, W., Feb. 9th. ALEXANDER FRANCIS.

TICKS AND RELAPSING FEVER.

SIR,—I can confirm the statements made by Colonel Mackenzie, in his letter of February 7th, and by Captain Nicholson, in his original article of December 20th, that spirochaetes were scanty and often difficult to find in the British cases of relapsing fever contracted in Palestine.

I was at the Military Laboratory, Port Tewfik (Suez), during two seasons of relapsing fever. Among the British cases occurring in that neighbourhood the parasites were rarely abundant, and they were never present in such numbers as were frequently found in Egyptian cases; there was, however, no difficulty in detecting them. But while I was at the Military Laboratory, Kantara, in the winter of 1917, as soon as British cases of relapsing fever began coming down the line from Palestine, a marked difference in this respect was noticeable. The parasites were nearly always extremely scarce, and sometimes could not be found at all until the second or even third examination. While I was at Jaffa, during the following spring, the same condition obtained. Indeed, I had such difficulty in finding the spirochaetes that I adopted the "thick drop" method for their detection (*vide* BRITISH MEDICAL JOURNAL, May 25th, 1918).

On the other hand, this difference was not noticeable in the Egyptian Labour Corps cases in Palestine. The spirochaetes in these patients could be found as readily as they were in the Egyptian cases dealt with at Kantara or Suez. Of course it happened now and again that the parasites were not numerous, but often they were swarming. May one offer the suggestion that the relapsing fever amongst the Egyptian Labour Corps in their camps in Palestine was louse-borne, while the British cases—to some extent, at any rate—were infected by ticks in the Judean caves?

This scarcity in number of the parasites, in the British cases from Palestine, was noticed, I think, also in other laboratories; in fact, I recollect that a memorandum dealing with the matter and emphasizing the necessity for repeated examination in the Palestine cases was officially circulated. As the same human host was concerned, it appears, on the ground of this difference alone, not to refer to other points, as though there were a

distinction somewhere in connexion with the parasite or its transmission in the two sets of British cases. It is quite true, as Colonel Balfour has pointed out (February 14th) that on the present data the question cannot be regarded as settled; still, I remember thinking at the time that the circumstances attending the particular infections detailed by Captain Nicholson did support strongly his view that these owed their origin to *Argas*.—I am, etc.,

London, Feb. 21st. H. M. WOODCOCK.

PREVENTION OF VENEREAL DISEASE.

SIR,—Lately the Women's Medical Federation has expressed its fear that the application of certain methods of prevention of venereal disease would rot the very foundations of society, and already that fear seems justified by Dr. McWalter's experience (February 21st, p. 273). His reference to "the seeming security of the packet" expresses what some of us have feared since such schemes were advertised. We foresee an increased demand for prostitution, with increased pressure brought upon young women and girls to surrender their chastity. Should not the medical profession pause before it gives the weight of its authority to a propaganda which may bring such dire results? Without discussing deeply what is necessary or unnecessary to the males, we may say at once that not only is sexual irregularity unnecessary to women, but that unchastity in her is most gravely and deeply harmful to the triple aspect of nature—body, mind, and spirit. Degradation, through sexual immorality, in her more sensitive and complex organization, is always painfully obvious. Nay more, we may say with fair confidence that the only two states in which she may develop in grace and favour are virginity and marriage. Seeing that this is the case with woman, is it not a grave thing for our learned profession to risk the encouragement of her sacrifice and prostitution? Could not the whole medical profession consider the question before such serious steps are taken? There must be many men who would scorn to admit their own defeat, even though in circumstances of such difficulty and complexity. A great number of men are led by public opinion, and possibly the incidence of venereal disease would not have been so great had medical men taken a different attitude in earlier days. Is it not possible to appeal to those higher instincts, which are the gift of humanity, and which can rule to the subjection of the lower? If the Church has failed, so much greater is the opportunity of our profession now!

The psychic effect of any new venture might probably be more accurately gauged by woman than by man, and she may therefore possibly be the best judge as to the mental development of a young man equipped with a prophylactic apparatus and fully instructed in its uses, and also as to his mentality and behaviour in the married state at a later period.

In the last sentence of his letter Dr. McWalter states that he has found the result that women feared—sexual depravity. His discovery that venereal disease increased with the prophylactic system was also foreseen by medical women among others.

I should like to add that, in my view, the above remarks apply to any propaganda designed to teach men how sexual irregularity may be indulged in with a lessened risk of venereal infection. Increased indulgence in man, causing increased degradation to woman, must react at last in degrading man. Man's nature, too, can be stunted in a certain development by indulgence in vice.—I am, etc.,

FLORENCE E. INGLIS, M.B., Ch.B.Edin.

Portsmouth, Feb. 22nd.

CLINICAL RESEARCH.

SIR,—If the first step towards knowledge be the knowledge of our own ignorance, there is some hope that the address of Sir James Mackenzie, delivered at the opening of the St. Andrews Institute for Clinical Research, will be epoch making, for no confession of ignorance could be more complete. Sir James, I think, wastes his time in trying to trace the origin of different diseases. The only difference I recognize is the difference between health and disease. When the environment of every individual is perfect there will be more chance of health being preserved as regards the macrocosm; but what of the microcosm? When the slums are all done away with, and the breath of heaven blows round every house: when drainage is perfect and our water supply pure; when our rivers once more become silvery streams instead of sewers, as some are at present; when, indeed, there is nothing but accident or climatic influences left even in our largest cities to interfere with health, will there be an end of disease? There will not; for when we have a perfect macrocosm and a perfect microcosm at birth, how long will it be before the microcosm is upset? Pythagoras, wisest of the Greeks, said a man ought to be ashamed of being ill—meaning that he alone, through ignorance or folly, was to blame; and the proverb that "a man is either a fool or a physician at forty" points to food as a cause of disease. In his classification of symptoms Sir James Mackenzie made three groups: (1) structural, (2) functional, and (3) reflex. He confesses that, although we can detect neither change of structure nor function, we can recognize the particular disease with great accuracy, and he mentions gastric ulcer as an illustration; and then comes what seems to me the most important sentence in his long address. He says (January 24th, p. 110):

> There may be no structural sign, nor sign of functional disturbance. Such symptoms (as those of gastric ulcer) are produced by an irritation of a limited portion of the central nervous system, in a reflex manner, the source of irritation being in the ulcer.

That is just the theory that I have been preaching for years. Many years ago, at a clinical meeting of the Edinburgh Branch of the British Medical Association, when the late Professor Gibson read a paper on angina pectoris, regarding it as a structural disease, I ventured to say that it was not structural but reflex, due to some irritation in the stomach, or intestinal canal. He would not believe me, and I do not wonder, for medical faith handicaps us all; but what are we to do when we have made up our minds that we have to do with an ulcer in the stomach? Send the patient to the surgeon to have it excised? I suppose that is what Sir James Mackenzie would do, and what is being done daily; but in spite of the success of the operation, so long as the primary cause of the ulcer is not discovered and removed, what guarantee can anyone have that another ulcer, or something worse, will not supervene? In my book published in 1911 I prove that food is the chief cause of disease, and there can be no doubt that improper food causes many symptoms reflexly before any structural, or perhaps even functional, change can be detected in the stomach. How food causes disease is the question which this century will see solved. Meantime I would suggest that it does so by spoiling the environment of some cells in the body, and with abnormal environment there will be abnormal functioning.—I am, etc.,

Hawick, Jan. 28th. JOHN HADDON, M.D.

INTRASPINAL PRESSURE IN ACUTE DISEASE.

SIR,—I desire again to direct the attention of the profession to the injurious effect of intraspinal pressure in many acute diseases. In an article published in the BRITISH MEDICAL JOURNAL of May 5th, 1917, on the cause of death in acute pneumonia, I attempted to show that the physical conditions, such as consolidation of the lung, were not the cause of the symptoms, for the former persist after the acute symptoms have disappeared, often quite suddenly. I also pointed out that increased intraspinal pressure was well known to be present in a large proportion of cases. In spinal meningitis the immediate relief resulting from tapping is another instance of benefit derived from the temporary removal of pressure from the vital centres.

In the Epitome of Current Medical Literature, January 10th, 1920 (paragraph 29), there appears a note by Herrick and Dannenberg on the subject of increased intraspinal pressure in acute diseases; they emphasize its frequency, and infer that "the increased pressure in the subarachnoid system may be a protective reaction in the early stage of infection," and warn against the possible danger of reducing it. But if their theory and their deduction from it be true, and the increased pressure is due to increased secretion of spinal fluid as the result of a "protective reaction"—that is, to prevent invasion of the meninges by the active toxin—it is not effective, and does not affect the argument that intraspinal pressure is injurious and may be relieved beneficially by tapping, as in the case of spinal meningitis, in which the injurious toxin is removed and the pressure at the same time reduced, which many reliable observers consider to be as beneficial, without the subsequent intro-

duction of serum, or even more so. I have no wish, however, to raise controversial points, but I hope, in view of the disastrous results to the community, both military and civil, of the last outbreak of influenza, that attempts will be made in the next epidemic to reduce the mortality by judicious tapping in suitable cases; this will, I believe, include the majority of bad ones; if properly done it is without risk.

Increased pressure on the vital centres in the medulla, if severe or prolonged, cannot be anything but disastrous, and if positive and reliable evidence is required in support of such an obvious proposal, no stronger fact can be adduced than the immediately beneficial effect of a satisfactory flow from a spinal puncture in spinal meningitis.

As a profession we are conservative, and rightly so, for by following those lines we exclude quackery; but it is well to remember that it took 300 years to apply a ligature to a bleeding vessel, and with all respect to authority we are prone to repeat in our textbooks fallacies which have been handed down year after year, to the detriment of the public and also to the reputation of the profession.—I am, etc.,

Broadstairs, Feb. 1st. H. V. DREW, F.R.C.S.

WAR HONOURS.

SIR,—I am quite in sympathy with your correspondent upon the above subject. I acted for nearly two years as A.M.O. to one of our largest county council mental hospitals, as did others of my friends, like myself upwards of 70 years of age, and was responsible at night for 1,000 patients, several of them shell-shock cases. The Army Council decline to bestow any medal upon the doctors, as they were not appointed by it but by the county council. I consider this rather straining a point. Soldiers were received daily and at all times, and examined on the spot. I press this, being one who contracted illness, which has nearly cost me my life, as was the case with others at my age (some died). It is a great satisfaction to have done something by way of help in this unprecedented war; nevertheless I think the authorities should bestow some sort of decoration upon those who volunteered for some duty at the onset.—I am, etc.,

February 18th. ANOTHER M.R.C.S.

SIR,—May I ask a question—namely, how is it that one never sees or hears mention of the excellent services rendered by the Admiralty surgeons and agents during the war—men whose care in the selection of recruits for the navy accounts to a great extent for its physical and mental constitution? Surely those men who have rendered such conspicuous service to the nation deserve some recognition from the Government. Not being connected with the navy, I have no other interest beyond wishing for fair play.—I am, etc.,

February 22nd. EXPOSTULATOR.

Universities and Colleges.

UNIVERSITY OF CAMBRIDGE.

AT a congregation held on February 20th the degree of M.D. was conferred upon T. E. Sandall, E. E. Paget-Tomlinson, and J. T. Fox.

UNIVERSITY OF ABERDEEN.

AMONG those upon whom the Senatus of the University of Aberdeen has decided to confer the honorary degree of LL.D. are Dr. William Bulloch, F.R.S., professor of bacteriology in the University of London; Major-General Sir Robert Jones, K.B.E., C.B., inspector of Military Orthopaedics, A.M.S.; Dr. David Nicolson, C.B., Lord Chancellor's visitor in lunacy; Sir Daniel Hall, K.C.B., F.R.S., secretary of the Ministry of Agriculture; Mr. J. H. Jeans, secretary of the Royal Society; and Sir J. C. Bose, D.Sc., founder director of the Bose Research Institute, Calcutta.

THE Finnish medical journal *Duodecim*, which has hitherto been published monthly in Finnish, will in the future appear as *Acta Societatis Medicorum Fennicae Duodecim*. Contributions to this journal will be published in English, French, or German. This change in the Finnish journal is in response to the growing determination on the part of Finnish scientists to publish their investigations under their own auspices and yet to make them accessible to the world at large.

The Services.

ROYAL ARMY MEDICAL CORPS.

STRENGTH AND ARRANGEMENTS FOR THE FUTURE.

A MEMORANDUM[1] giving details of the work of the various departments of the War Office in connexion with the reconstruction of the Army since the armistice has been issued, amplifying the speech of the Secretary of State in introducing the Army Estimates for 1920-21 on February 23rd. In a note attached to the memorandum Mr. Churchill says that the work of demobilizing the large forces on foot at the armistice and of bringing into being the army of the future was so gigantic that he had been compelled to confine himself in his speech to the larger issues.

Territorial R.A.M.C.

In dealing with the Royal Army Medical Corps, the memorandum notes that a Territorial Section has been added to the War Office, which it is hoped will be a permanent section to deal with medical questions and personnel of the new Territorial army. The medical section of that army will be reorganized on its pre-war basis, with such additions and alterations as the war had shown to be necessary. The war showed the importance of casualty clearing stations, and it is proposed to form and maintain these medical units. Regimental medical officers will be appointed to battalions and will be carried on a Divisional List, which will include also officers of field ambulances and casualty clearing stations, and will show their seniority. Field ambulances will be organized with a head quarters and two sections. Sanitary Sections will be allowed to each Division; it is proposed to form them into companies and place them under the Director of Hygiene for technical training. Specially qualified medical officers, such as pathologists, *x*-ray specialists and hygienists, will be allowed for in the organization. General hospitals will be formed in connexion with universities and medical schools. A large number of physicians and surgeons of universities and hospitals will be required, and will be given the opportunity of training in the military duties of hospital administration. They will be carried on a special list.

Dental Corps.

It is proposed to form a dental corps, consisting of 110 officers and 132 other ranks (mechanics and orderlies).

Directorates of Pathology and Hygiene.

Reference is made to the establishment of Directorates of Hygiene and Pathology, according to the plan we announced some time ago. For each there will be a Director and Deputy at head quarters, and Assistants and Deputy Assistants in the important commands and districts at home and abroad. Officers will henceforth be able to continue to work in these special subjects throughout their service, instead of being compelled, as has hitherto been the case, to abandon them in order to take up administrative duties on attaining a certain seniority. Promotion to the higher ranks is now open to such specialists, and it is hoped that this will attract to these branches men from whose labours the army may expect to reap constantly increasing benefit. Each Director will have the aid of a strong Advisory Committee of experts, both civil and military, which will not only strengthen his hands in technical matters, but help to secure effective collaboration with other workers in these subjects, whether in a civil profession or in the medical branches of other departments of the State.

Strength: Officers.

The pre-war establishment of officers R.A.M.C. was 1,068; on the date of the armistice the strength was 14,461, and in addition 1,524 civil medical practitioners were employed. At present 3,338 officers and 322 civil medical practitioners are employed, and the number is continually being reduced in conformity with the reduction in hospital population. At the armistice the number of patients in the military hospitals in the United Kingdom was 316,000; on May 1st, 1919, it had been reduced to 112,000, and on February 1st, 1920, to 28,000. The policy had been to close the smaller hospitals and transfer the patients to hospitals which could be retained, and in this way the number of vacant beds had been kept as low as possible. In order to

[1] [Cmd. 565.] Price 3d.

replace wastage of officers and to provide for garrisons in Mesopotamia and Palestine permanent commissions in the R.A.M.C. had been offered to Territorial, Special Reserve, and temporarily commissioned officers, and in this way a number of most valuable and experienced officers had been added to the Corps. As far as possible the higher appointments in the Corps will, it is stated, be made by selection from amongst the officers who have proved themselves on active service.

Other Ranks.

The pre-war establishment of warrant officers, non-commissioned officers and men R.A.M.C. was 3,895; at the armistice they numbered 131,361. In addition there were 18,660 Voluntary Aid Detachment general service women in hospitals and other formations in the United Kingdom. Large numbers of such women were employed also in France, Salonica, and Malta. The strength of other ranks in February, 1920, had been reduced to 18,412 and the number of Voluntary Aid Detachment general service women to 4,771, considerable numbers of them being employed in the Rhine army, Black Sea, and Malta. After the armistice measures were taken to enrol further numbers of Voluntary Aid Detachment general service women in order to set free other ranks who were demobilizable, and the system is being followed to the utmost extent.

Vaccine Department.

The Vaccine Department of the Royal Army Medical College produced more than thirty-three million doses of vaccines against typhoid, cholera, dysentery, and other conditions during the war. The success of the vaccines was most conspicuous against the typhoid group of fevers, and is believed to have been a large, if not the largest, factor in the remarkable freedom of the British armies from this scourge. From the beginning of the war down to the end of 1918 there were only 7,423 cases of typhoid and paratyphoid fever, with 266 deaths, in the British armies in France. In the French army before it was fully protected by anti-typhoid vaccination there were from the beginning of hostilities to the end of October, 1915, 95,809 cases, with 11,690 deaths. Afterwards the rates of the French army were more comparable with the British. Recent German statistics of mortality in their armies during the war mention 7,751 deaths from typhoid fever.

HONOURS.

C.B.E.

Temporary Lieut.-Colonel Richard Jones Morris, R.A.M.C., has been appointed C.B.E. (military) in recognition of valuable services rendered in connexion with the war.

FOREIGN DECORATIONS.

The following decorations have been conferred upon officers of the R.A.M.C. by the Allied Powers for distinguished services rendered during the war:

By the President of the Republic of China.

Order of Wen-Hu (4th Class): Temporary Majors (acting Lieut.-Colonels) William Harold Graham Aspland, and George Douglas Gray, O.B.E. Temporary Majors Stafford Mouritz Cox and Thomas Norton Frood. *(5th Class):* Temporary Captains Percy Campbell Leslie, Henry Delahunt Matthews, Ernest John Peill, John William Pell, and William Robert Reeds.

By the Government of the Republic of Panama.

Medal of La Solidaridad (3rd Class): Captain and Brevet Major (acting Major) William Leckie Webster; Captains (acting Majors) William Kealty Campbell, D.S.O., M.C., and John Murray Weddell.

The name of Dr. E. A. Montgomery has been brought to the notice of the Secretary of State for War for valuable services rendered in connexion with the war.

OUT of the 130,000 men in the Italian navy, 2,936 were wounded and 3,169 died during the war; 2,524 of the deaths were due to drowning. These figures are in accordance with the fact observed in previous wars that in naval forces the number of deaths exceeds the number of wounded. Three per cent. of the losses were due to tuberculosis. There were twelve cases of small-pox with three deaths among 125,000 men. The incidence of gonorrhoea and soft sore was 38.8 per cent., and of syphilis 19.4 per cent. In the period preceding the system of prophylaxis now in force the figures were 55.3 and 24.5 per cent. respectively.

Obituary.

DR. JAMES ADAMSON, who was an outstanding figure among the general practitioners in the North of England, died on February 13th at Hetton-le-Hole. He was born at Ballydoughan, co. Down, in 1843, and received his medical education at Belfast and Glasgow, graduating M.D. of the University of Glasgow and taking the L.R.C.S.Edin. and L.M. diplomas in 1869. He went to Hetton in that year as assistant to Dr. Edgar; afterwards he became his partner, and succeeded him in 1878. Dr. Adamson was surgeon to the Hetton and North Hetton Collieries up to the time of his death; for the last ninety-four years these collieries have only had two surgeons—probably a record in its way. Dr. Adamson took the keenest interest in, and was one of the pioneers of, ambulance work in the county of Durham. He started his first ambulance course in 1877, and continued the classes until within the last few years. The Hetton Division, of the St. John Ambulance Brigade was founded by him in 1901, and he acted as first honorary surgeon and superintendent. He held the appointment as M.O.H. for Hetton Urban District Council, resigning his position in 1914. At the time of his death he was medical officer and public vaccinator for Hetton-le-Hole district Houghton-le-Spring Union, and medical superintendent of the Houghton and Hetton small-pox hospital. He was an ex-president of the Sunderland and North Durham Medical Society and of the Northumberland and Durham Medical Society.

WE regret to record the death, in his seventy-fifth year, of Dr. JOHN WILLIAM HEMBROUGH, M.O.H. for the county of Northumberland, which took place on February 13th, at Newcastle-on-Tyne. Dr. Hembrough was the son of a doctor, and was born in Lincolnshire. He received his medical education at St. Bartholomew's Hospital, where he was a fellow student with the late Sir Richard Thorne-Thorne and Sir William Power. He obtained the L.S.A. diploma in 1865, and the M.R.C.S. in the following year. In 1885 he graduated M.D.Durh., and in 1890 he obtained the D.P.H. diploma. After some years of general practice he devoted himself to public health work; and twenty-six years ago was appointed medical officer of health to the Northumberland County Council. He was a member of the council of the Society of Medical Officers of Health, of which he had long been an active member, and was a member of the Newcastle-on-Tyne Division of the British Medical Association. He was an examiner in public health to the University of Durham, and a member of the examining board of the Royal Sanitary Institute. Dr. Hembrough was well known among his colleagues for his devotion to duty and the thoroughness of his work. Notwithstanding ill health and much pain during recent years, he remained at his post up to the day of his death. His wife died many years ago, and he leaves a married daughter.

WE regret to announce that Dr. JAMES PINKERTON, of West Kirby, died on February 16th. After studying medicine at Queen's College, Belfast, he graduated M.D. (with honours) and M.Ch. at the Royal University of Ireland in 1881, and won the Malcolm and Coulter exhibitions at the Belfast Royal Hospital. He began practice in Birkenhead about thirty-two years ago, and was for twenty-one years honorary medical officer to the Wirral Children's Hospital; he was also honorary surgeon to the Birkenhead Eye and Ear Hospital. On his retirement in 1909 Dr. Pinkerton removed to West Kirby, where he held the post of honorary medical officer to the Children's Convalescent Home; during the war he acted as school medical officer under the Liverpool Corporation. He was a member of the Cheshire Panel Committee, and of the local Division of the British Medical Association. He is survived by his widow, a daughter, and two sons, one of whom, Dr. P. B. Pinkerton, served in German East Africa as a captain in the R.A.M.C.(S.R.).

DR. THOMAS MCCUBBIN of Gillingham, who died from pneumonia and cerebral haemorrhage on February 14th, aged 40, was educated at St. Mungo's College, Glasgow, and took the Scottish triple qualification in 1902, after which he acted as house-surgeon and house-physician to

the Glasgow Royal Infirmary. He practised in Liverpool for ten years before going to Australia, whence he returned on the outbreak of the war and took a temporary commission in the R.A.M.C. After serving in France Dr. McCubbin began practice in May, 1917, at Gillingham, where he made many friends. He was a member of the local Division of the British Medical Association.

DR. JOHN ALEXANDER BOYD, of Upper Gloucester Place' London, died in Ireland on January 22nd, where he had gone in the hope of regaining strength. He was the son of the late Nathaniel Boyd, of Carntall, co. Antrim, Ireland. Through his mother he was grand-nephew of Dr. James McHenry, physician, playwright, novelist, whose book, *O'Haloran, the Insurgent Chief*, contains an account of the Irish rebellion of 1798, which is, we are informed, incorporated in the official history of Ireland. He graduated M.B., B.Ch., B.A.O. in the Royal University of Ireland in 1907. After spending four years in various hospitals he began private practice in 1911. To those who knew him intimately his loss is as great as was the privilege of his acquaintance.

LIEUT.-COLONEL JOSHUA DUKE, Bengal Medical Service (retired), died at Guernsey on February 13th, aged 72. He was the third of eight sons of the late Dr. T. O. Duke of Clapham, and was born in 1847. He was educated at St. Paul's School and at St. Thomas's and Guy's Hospitals, and took the diplomas of M.R.C.S. and L.S.A. in 1868. He subsequently went as a ship surgeon to Melbourne and served as resident assistant surgeon to the Bendigo Hospital. On his return to England he joined the I.M.S. in 1872, retiring with the rank of brigade surgeon lieutenant-colonel in November, 1902. He was very unfortunate as regards promotion, for he had been officiating in the administrative grade as full colonel for several months, when he attained the age of 55, on June 14th, 1902, and was thus barred by age from further promotion, though the next vacancy for promotion to full colonel took place only two days later, when the next on the list got the step. He was allowed an extension of service up to November 1st, 1902, and received one of the extra compensation pensions of £100 a year. The last twenty years of his service was spent chiefly in political employment; he was for several years residency surgeon in Kashmir, and accompanied a special mission to Gilgit. He served in the Afghan war of 1878–80, taking part in the action at Charasiah, in the operations at and around Kabul, in the famous march under General Roberts from Kabul to Kandahar, in the battle of Kandahar, and in the operations against the Marri tribes; was mentioned in dispatches, in G.G.O. No. 137 of 1879, and received the medal with three clasps and the special Kabul-Kandahar bronze star. He rejoined for service in the recent war on December 3rd, 1914, and served in York Place Indian hospital at Brighton from that date till it was closed on December 31st, 1915, and afterwards in a hospital at Bermondsey. He was the author of several works: *Queries at a Mess Table: What shall I Eat? What shall I Drink?* 1878; *Banting in India: Recollections of the Kabul Campaign*, 1883; *The Prevention of Cholera*, 1900; and also rewrote and edited the fourth, fifth, sixth, and seventh editions of Ince's *Kashmir Handbook*, 1888 to 1908, the two last being published under his own name. He is survived by his widow, one son—Dr. H. L. Duke, of the Colonial Service (Uganda)—and three daughters. He was buried in Guernsey Cemetery on February 17th, his coffin covered with the flag, and the "Last Post" given by a detachment of the Loyal North Lancashire Regiment.

SURGEON-GENERAL JAMES ALBERT CLERY, C.B., A.M.S., died at Blackheath on February 10th, aged 73. He was born on December 21st, 1846, the son of the late Thomas Clery of Ballynahinch House, county Limerick, and was educated at Stonyhurst and at Trinity College, Dublin, where he graduated M.B. and M.Ch. in 1870. He entered the army as assistant surgeon in 1871, and reached the rank of surgeon-general in 1902. He was placed on temporary half pay at the end of 1905, and retired at the end of 1906. He served in the Sudan campaign of 1884–85; in the Nile expedition, receiving the medal with a clasp, and the Khedive's bronze star; in the Sudan campaign of 1898, when he gained the medal, with the special Khedive's medal, and was mentioned in dispatches; and in South Africa, where he was principal medical officer on the lines of communication, took part in the relief of Ladysmith, and in operations in the Transvaal, the Orange River Colony, and in Natal; was twice mentioned in dispatches, and received the Queen's medal with six clasps, the King's medal with two clasps, and the C.B. He rejoined for service in the recent war on July 17th, 1915.

CAPTAIN ALLAN WATSON, D.S.O., R.A.M.C., died on January 18th at Tembura, in the Southern Sudan. He was the eldest son of the late Rev. William Watson of Kilbearn, Ross-shire, and was educated at Edinburgh University, where he graduated M.B. and B.Ch. in 1909 and M.D., with high commendation for his thesis, in 1914; he took the diploma in tropical medicine and hygiene in 1910, and the D.P.H. of the Edinburgh Colleges in 1912. After filling the posts of house-surgeon of the Royal Bucks Hospital at Aylesbury, of assistant house-surgeon of the Guest Hospital at Dudley, and of senior house-surgeon of the East Suffolk Hospital at Ipswich, he entered the R.A.M.C. as lieutenant on January 30th, 1914. While going through the R.A.M.C. school he gained the Herbert prize as the first student of his term, the De Chaumont prize in hygiene, and the second Montefiore prize in surgery. He was promoted captain on March 30th, 1915, and received the D.S.O. on March 10th, 1917, for service in Mesopotamia.

Medico-Legal.

A DRUGLESS HEALER SENTENCED.

AT Stafford Assizes, on February 18th and 19th, Arthur Barker of Tunstall, aged 34, described as a quack doctor, was indicted before Mr. Justice Sankey for the manslaughter of Mrs. Sharples at Burslem on September 30th. The prisoner pleaded not guilty. Mr. Vachell, K.C., alleged for the prosecution that the woman's death was due to Barker's incompetence and insufficient attention to her when he had undertaken the sole duties of medical attendant. Three years ago the deceased woman was attended by a regular practitioner for jaundice and later for pleurisy. In the spring of 1919 she was attended by Dr. Garvey, who saw her last in May but might have sent her medicine during June. Mr. and Mrs. Sharples then heard of the prisoner, who was generally known as "Dr. Barker"; he was not qualified, and had no hospital practice or training. For five years or so he had been undertaking treatment of medical and surgical cases in Tunstall. For ten years before that he had been a miner working in the pits, and when he quitted that work he put up a brass plate on which he described himself as a professional hypnotist and drugless healer. Among the letters he put after his name were "M.T.," which counsel gathered stood for mechano-therapy, the system by which he professed to cure people. He was consulted by the husband, and paid his first visit to the wife on July 3rd, continuing to attend about twice a week until her death; he was paid 7s. or 10s. a visit. He had the sole medical care of the woman, and never suggested that anyone else should be called in, or admitted the case was beyond his powers. A fortnight before her death the woman's condition became very serious, and the accused gave her injections, and afterwards used an unsterilized rubber catheter. Towards the end he took the husband to his dispensary, told him that he had no medicine to offer him owing to the railway strike, and added that he would not stand in the way of further help being sought. The husband at once sent for Dr. T. W. Richmond, who attended with Dr. Blackie; they found the woman dying. A *post-mortem* examination showed extensive bed-sores, growths in various organs, and eighty-one gall stones in the gall bladder; but the immediate cause of death was acute cystitis. Dr. Richmond was closely questioned by Sir E. Marshall Hall for the defence, with regard to the prisoner's practice, the cause of death, the exclusion of the prisoner from the *post-mortem* examination, the proceedings in the coroner's court, the communication with the Director of Public Prosecutions, and "bloodless surgery" and "the profession of osteopathy." Dr. John Russell, who made the necropsy, said in cross-examination that he took no steps to acquaint the medical authorities of the circumstances of the case, and denied that he and other members of the medical profession had got their knives into the accused, either consciously or unconsciously; he believed that whatever action had been taken was in the interests of the public. He maintained that the use of an unsterilized catheter caused the cystitis from which the woman died; the treatment by the accused amounted to gross negligence. Dr. E. C. Myott, pathologist to the North Staffordshire Infirmary, said the woman had cystitis, and the catheter produced was not a proper instrument to use owing to the extreme difficulty of sterilization. Dr. B. H. Spilsbury said he had no reason to doubt the conclusion drawn by the medical witnesses that death was due to cystitis. External pressure was an improper mode of treatment, and it was gross negligence to try. The catheter produced, if unsterilized, would suffice to accou

for the introduction of micro-organisms from without, under the existing conditions of the case. Neglect of any of the recognized remedies for cystitis would tend to shorten life. Death was due to cystitis, and not to malignant disease. Sir E. Marshall Hall, after an unsuccessful submission that there was no case to go to the jury, intimated that he would call no evidence. Having objected to the expression quack doctor, he argued that this was an attempt to burk any form of medical practice not carried on by a duly registered member of the medical profession. The whole principle underlying this prosecution was "Down with the unregistered man! Protection for the members of the medical profession!" In the course of his summing up the judge said that the law was that when a person, licensed or unlicensed, dealt with the health of another he was bound to use competent skill and give sufficient attention, and if the patient died from want of either, the person was guilty of manslaughter. The jury found the prisoner guilty, and in sentencing him to four months' imprisonment with hard labour, his Lordship said he quite agreed with the verdict; had they not returned it the jury would have been doing something quite wrong and against the public interest. The real danger of unqualified men was when they got a really dangerous case and they did not know much about it, and the patient kept on getting worse, and a proper doctor was not called in until it was too late. He could not help thinking the prisoner was more misguided than anything else. He knew the effect of this conviction would be to destroy the prisoner's practice.

Medical News.

THE annual meeting of the Royal Medical Benevolent Fund will be held at 11, Chandos Street, London, W.1, on Tuesday, March 16th, at 5.30 p.m.

A Society of Medical Officers of Maternity and Child Welfare Centres has been formed, and a draft constitution will be submitted to a meeting at Bedford College, Regent's Park, London, on Friday, March 26th, at 5 p.m. Medical officers in charge of centres who have not received an invitation to join the society are asked to communicate with the secretary, Miss Halford, National League for Health Maternity and Child Welfare, 4, Tavistock Square, London, W.C.1.

AT a meeting of the Central Midwives Board for England and Wales held on February 19th, Sir Francis Champneys in the chair, it was announced that Sir Francis Champneys, Dr. W. S. A. Griffith, and Mr. C. Sangster had respectively been re-elected as their representatives on the Board by the Royal College of Physicians of London, the Royal College of Surgeons of England, and the Society of Apothecaries of London.

A SECOND post-graduate course of instruction in the diagnosis and treatment of venereal disease is being arranged by Mr. K. M. Walker at St. Bartholomew's Hospital Clinic, Golden Lane, E.C., established by the Corporation of London. The course will be held on Thursday afternoons at 5.30 p.m., commencing Thursday, March 4th. The beds attached to the clinic are available for the reception and study of suitable cases in addition to work in the out-patient department. There are still a certain number of vacancies. Any medical practitioner wishing to attend is invited to send his name to the Secretary, National Council for Combating Venereal Diseases, 81, Avenue Chambers, Southampton Row, London, W.C.1.

STEPS have been taken to form a properly constituted Old Students' Association at King's College, London. A committee was lately formed which has drawn up a provisional constitution, and a general meeting will be held on Thursday, March 4th, at 6 p.m., at the College, to ratify it. It has been possible to send notices of this meeting only to those old students whose names are on the register, but it is hoped that the meeting will be made widely known, and that as many old students as possible will be there.

A DEPARTMENT for diseases of children and a child welfare consultative centre will be opened at the Great Northern Central Hospital, Holloway Road, N., on March 1st. There will be two sections—medical and surgical—and patients, who must be children under 12 years of age, will be received on Monday afternoons at 2.30 p.m.

A PRACTICAL advanced course in operative ophthalmology will be given during May and June at the Hôtel-Dieu, Paris, by Professors De Lapersonne and Terrien, with the assistance of the heads of the clinic and laboratory. The course is open to foreign as well as French doctors and students. The class will be limited to forty and the fee is 100 francs. Communications should be addressed to the Secrétariat de la Faculté de Médecine, Paris.

THE Huddersfield Royal Infirmary has received an anonymous gift of £1,000 for the endowment of a bed in memory of the late Dr. Peter MacGregor of Huddersfield.

THE Senate of the University of London has appointed Dr. James McIntosh to the University chair of pathology tenable at the Middlesex Hospital Medical School, and Dr. Sidney Russ to be the first incumbent of the Joel chair of physics at the Middlesex Hospital Medical School.

THE Brighton Division of the British Medical Association has arranged a series of six clinical demonstrations, beginning March 4th, to be held at the Sussex County Hospital and the Children's Hospital. The demonstrations are open to all members of the profession.

QUEEN ALEXANDRA'S Field Force Fund, which was brought into existence in November, 1914, was demobilized last month. During the five years of its existence it sent out parcels to the number of nearly a quarter of a million to regiments in Europe, Asia, Egypt, Africa and the Cameroons. The surplus in hand is £3,000, and Queen Alexandra has decided that the annual interest shall, with certain limitations, be paid to the Village Centres Council for the benefit of the disabled ex-service men at the Village Centre, Enham, Hampshire.

IT is proposed to hold a reunion dinner in London, towards the end of April, for all ranks, men and women, of No. 34 (the Welsh) General Hospital and the Welsh Hospital, Netley. No. 34 General served as an Indian hospital of 3,000 beds, under the War Office, and the Welsh Hospital, Netley, was supported by Wales throughout the war. Colonel A. W. Sheen, A.M.S., formerly officer commanding successively the two hospitals, will preside at the dinner. Those wishing to attend are asked to notify Dr. R. L. Mackenzie Wallis, 55, Townshend Road, N.W.8.

AT a meeting of the Vienna Medical Society on January 30th Professor K. F. Wenckebach delivered a eulogium on the late Sir William Osler, the audience rising from their seats as a token of mourning.

THE Ministry of Health have been notified of a case of plague on the ss. *Alps Maru*, which arrived in the Port of London on February 9th from Japan, and entered the Millwall Dock on February 14th. One of the crew fell sick on February 15th, and as he was suspected on February 17th to be suffering from plague he was removed to the isolation hospital. The diagnosis of plague has been confirmed by the Bacteriologist of the Ministry from material obtained from the patient. The vessel has been removed to the Port Mooring Station for infected ships, and all necessary precautions have been taken by the port sanitary authority to prevent spread of infection.

PUBLICATION of the *Revue de la Tuberculose*, suspended during the war, is about to be resumed. It is the organ of the French tuberculosis society (Œuvres de la Tuberculose), and publishes its scientific proceedings. The *Revue* will be enlarged, and will in future publish original articles, as well as abstracts from other periodicals.

THE second number of *Discovery* (London: Murray, 6d. net; 7s. 6d. a year post free) is an advance on the first. It contains articles by Professor W. L. Bragg on crystal structure and by Mr. C. G. Darwin, of Cambridge, on the number of the elements, which seem to us exactly to fulfil the need which the periodical is intended to meet.

DR. MARCEL LABBÉ has been nominated professor of pathology and therapeutics in the Paris Faculty of Medicine.

THE Prussian Diet has appointed a commission consisting of Abderhalden, Lubarsch, Morawitz, Posner, Schittenhelm, Stephan, Stolte, Uhlenhuth, and others, to investigate the value of Friedmann's remedy for tuberculosis.

THE Hague bookselling firm of M. Nijhoff has celebrated the third centenary of the foundation of Batavia by issuing a catalogue of books concerning Netherlands India. It includes a section on medicine and on anthropology, containing books chiefly in Dutch, many of them on subjects concerned with tropical medicine.

AT a session of the "Gesellschaft für soziale Medizin, Hygiene und Medizinalstatistik," Professor Kayserling of Berlin proposed that a tuberculosis law should be enacted in Germany. It should aim exclusively at the prevention of tuberculosis, and no clause should be accepted which did not take into consideration the welfare of the patient. His principal points were (1) compulsory notification of every infectious case; (2) official organization of a network of dispensaries through which the law could be administered on a provident basis; (3) provision of hospital accommodation, free of charge, for advanced cases, dangerous to their home surroundings; (4) exclusion of infectious cases from employment bringing them into intimate contact with children, and (5) introduction of general measures affecting occupations and public health.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

IN order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL.

THE postal address of the BRITISH MEDICAL ASSOCIATION and BRITISH MEDICAL JOURNAL is 429, Strand, London, W.C.2. The telegraphic addresses are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London;* telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London;* telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London:* telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin, and of the Scottish Office, 6, Rutland Square, Edinburgh.

QUERIES AND ANSWERS.

INCOME TAX.

"W. B. C." inquires as to the assessment of income entirely derived from service on pensions boards.

*** As the appointment is not held directly under the War Office it would presumably be impracticable to support a claim to the special "service" rates of tax, and the income would be liable at the ordinary earned rates—that is, 2s. 3d. in the £ if the total income does not exceed £500, and 3s. if it is between that amount and £1,000. A reasonable sum to represent the additional cost of hotel board and residence would be an admissible deduction if the duties of the appointment—it is assumed that there is only one appointment—involve travelling from place to place.

"J. S." has been residing abroad as a missionary, and has been in this country on full salary since last June. What is his liability to income tax?

*** We assume that our correspondent has not maintained a residence in this country during his absence abroad. He is liable for the financial year ending April 5th, 1920, as a British resident. The appropriate form for his declaration is No. 12, and he can obtain one from the local inspector of taxes. He will be assessable on the amount of his salary so far as received in this country, less the abatement according to the usual scale, wife allowance of £50, provided that the total joint income of himself and his wife does not exceed £800 per annum, and life assurance allowance; the rate of tax will, of course, be on the earned scale, and he will apparently have a right to set off some excess tax suffered on his income from investments. A personal call at the office of the inspector of taxes might serve to clear up these questions conveniently.

LETTERS, NOTES, ETC.

A WARNING.

DR. W. J. O'SULLIVAN (16, William Street, Limerick, Ireland) writes to put medical men on their guard against a scheme for extracting money from their pockets. A well dressed man, he says, calls upon a medical practitioner (usually an Anglo-Irishman), stating that he has just been released on parole from an English prison, where he was interned for a seditious utterance, or tells some such story. He expresses great anxiety to get back to Ireland to resume his practice. In two cases in which Dr. O'Sullivan says his name was used, money was obtained, but not repaid as promised.

TREATMENT OF PSOROPTIC MANGE (PSOROPTES COMMUNIS, VAR. CUNICULI).

MR. J. E. M. MELLOR, B.A. (Gonville and Caius College, Cambridge), writes: The following note on a simple and successful treatment of psoroptic mange in a rabbit may be of interest.

On February 11th, 1919, a laboratory attendant brought me a rabbit, one ear of which was in the condition described by Cranston Low in 1911 (An Investigation into Scabies in Laboratory Animals, *Journ. of Path. and Bact.*, vol. xv, p. 338). The whole of the inside of the ear was filled with a mass of dry crusts like flakes of pastry. There was an offensive smell and the ear was tender and warmer to the touch than the unaffected one. There were a few dry scurfy scales on the outside of the ear, but these contained no acari. The head was sometimes carried slightly inclined to the side of the affected ear which hung down limply. The rabbit was observed to scratch occasionally and shake its head, when portions of the scaly débris would be shaken out.

On February 11th, portions of the pastry-like flakes were carefully removed from the ear with forceps (one piece removed measured 1.5 inches long and was 0.5 inch thick). Below these dry scales there was a soft whitish-yellow substance. This material and the crusts were examined under the microscope and found to contain large numbers of acari. A small bunch of acari was placed on a slide under the microscope and a drop of a solution composed of 1 per cent. creosote oil mixture, 0.25 per cent. bile, and 10 per cent. soft soap was run in. All the mites were dead in four minutes. (For the composition of creosote oil mixture see "Investigations on the Prevention of Nuisances arising from Flies and Putrefaction," by F. W. Foreman and G. S. Graham-Smith, *Journ. Hygiene*, 1917, xvi, 2, pp. 109–226.)

A few drops were therefore applied to the inside of the rabbit's ear with a small pipette. On February 12th and 13th the same treatment was repeated. Only a few drops of the solution were used, as it was not certain whether it would irritate the tender surface of the animal's ear. On February 14th mites found were sluggish. Since no signs of irritation were observed and the animal did not seem worried by the treatment, more solution was used on February 14th and 15th. The ear was held up by an attendant, and a few cubic centimetres of the liquid kept in for four minutes on both occasions. No mites were found on February 15th. On February 18th the ear was quite clean, save for two lump-like scabs on the outside and back of the ear. These scabs were slightly raised off the surface of the skin and treated with a few drops of solution.

On March 5th the rabbit was again examined carefully. No parasites were seen, and the ear was clean, though it still felt a little warmer than the unaffected one.

The cure was therefore effected in four days. After the first treatment on February 11th the rabbit was placed in a clean hutch. The infected hutch was cleaned out and all the scrapings burnt. The inside of the hutch was then thoroughly sprayed with creosote oil mixture undiluted. A healthy rabbit placed in the disinfected hutch and rabbits in the adjoining hutch remained clean.

A mangy rabbit taken from another hutch was later completely cured by similar treatment administered by an attendant when I was away. Less than 50 c.cm. of solution were used, so that the cost of treatment of the rabbit amounted to less than a penny.

These mites are very active; one mite dragging its mate *in copulo* was timed with a stop-watch on the small striations on the back of a linen-covered book. It was found to cover 6 mm. in five seconds.

A GRATEFUL COUNTRY.

A CASE recently brought to notice is that of a medical officer who sustained a serious wound of the head causing hemiplegia. He recovered sufficiently to return to military service, but was again wounded, this time in the foot. He has been discharged with a pension of £170 a year. He is a married man with children. The National Relief Fund exists to help men who have thus suffered for the country, and it has recently made a grant to the medical War Emergency Fund, and from this fund something may be done for this individual medical officer. But is it right, and is it in accord with the intention of the country, that men who have served so well and suffered so much should have to seek help to supplement their pension? Ought not the pension itself to be adequate? It may be said that this officer's pension is nearly as much as a man in the ranks will receive if totally disabled. But is it good national economy to put a professional man in such a position that he cannot educate his son to succeed him in his profession?

ERYSIPELAS: A CORRECTION.

DR. F. S. ARNOLD calls attention to an error in his reply to "X.Y.Z." in last week's JOURNAL. The word "eczema" (p. 278, col. 1, line 5) should, of course, be "erysipelas."

VACANCIES.

NOTIFICATIONS of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 35, 38, 39, 40, 41, 42, and 43 of our advertisement columns, and advertisements of partnerships, assistantships, and locum tenencies at pages 36, 37, and 38.

THE following appointments of certifying factory surgeons are vacant: Belturbet (Cavan), Berkeley (Gloucester), Bruff (Limerick), Clonakilty (Cork), Halstead (Essex), Lochgilphead (Argyll), Romford (Essex), Stock (Essex), Stourport (Worcester), Toddington (Bedford).

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Seven lines and under	0	6	0
Each additional line	0	0	9
Whole single column	4	0	0
Whole page	12	0	0

An average line contains six words.

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NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.